

TESTED WAYS TO HEALTH

313

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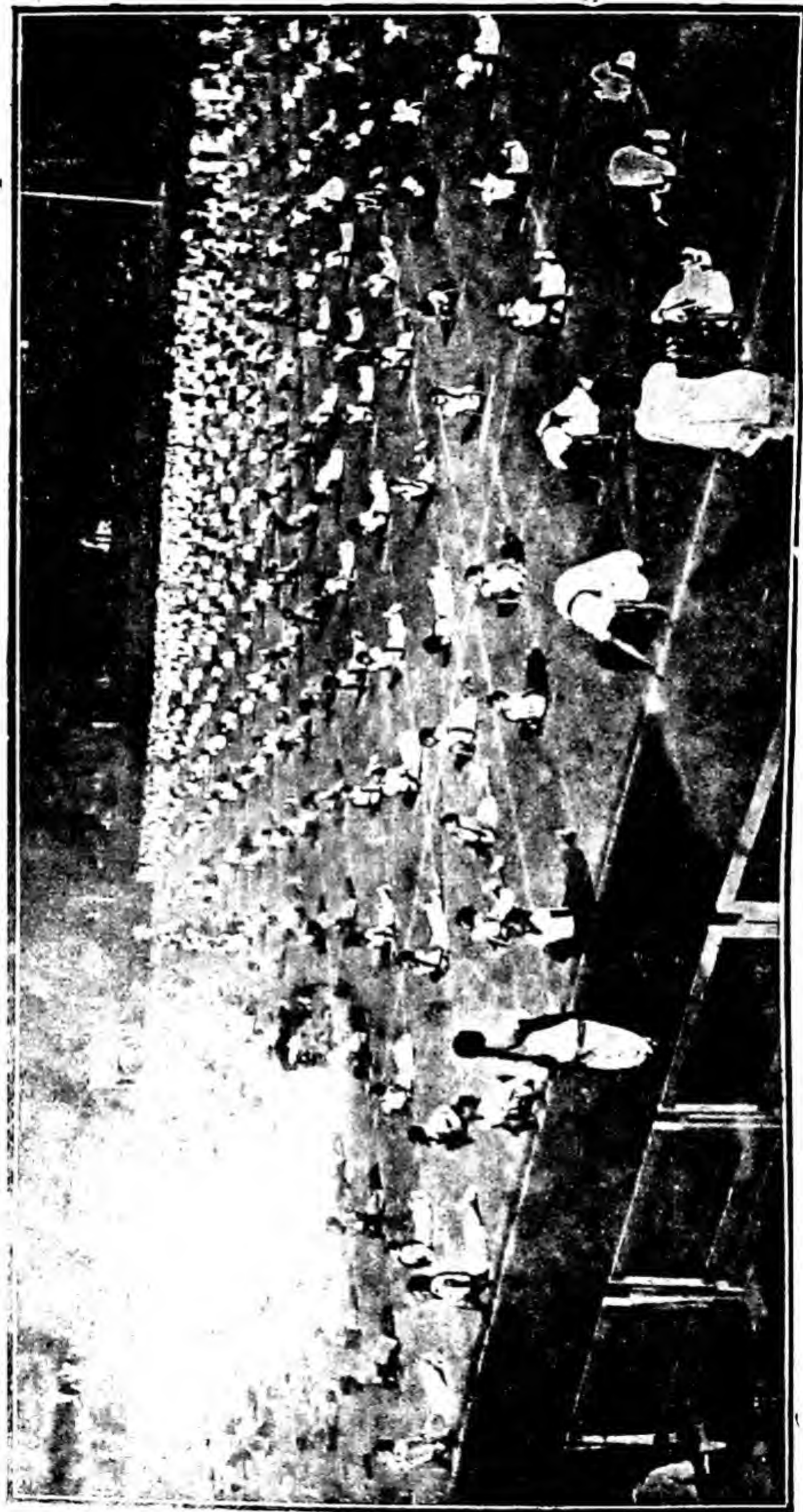
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CONTENTS

11
324
Page

HEALTH MUSTS	7
<ul style="list-style-type: none"> We Must Breathe We Must Eat and Drink We Must Work and Play 			
THE BALANCED DIET	....	....	27
<ul style="list-style-type: none"> The Essentials of a Balanced Diet We Don't Eat Calories You and Your Proteins Fats and Physical Fitness 			
DIET IN INDIA	....	....	40
<ul style="list-style-type: none"> The Problem of Diet Variety Assures All Elements The Rice Diet Animal Protein Diet 			
FOOD AS MEDICINE	....	....	51
<ul style="list-style-type: none"> Vegetables Fruits 			
ANIMAL PRODUCTS	....	....	78
<ul style="list-style-type: none"> Milk Eggs Balancing Non-Flesh or Vegetarian Diet Vitamins 			
MAINTAINING PHYSICAL FITNESS	....		93
<ul style="list-style-type: none"> How to Give Yourself a Physical Checkup Exercises for Health 			
HEALING BY NATURE'S WAY	....	....	107
<ul style="list-style-type: none"> Water Treatments in the Home Water Treatments for the Common Cold Baths for Health and Healing 			
TIMELY TIPS	....	....	121
<ul style="list-style-type: none"> Ten Timely Tips for the Constipated Ten Timely Tips for the Dyspeptic Ten Timely Tips about High Blood Pressure Ten Timely Tips for the Catarrhal Ten Timely Tips for the Diabetic Ten Timely Tips for the Nephritic 			



Press Photo Agent

All Maharashtra physical culture demonstration.

HEALTH MUSTS

5901
S. B. WHITEHEAD, D.Sc.

WE MUST BREATHE

TO say that we must breathe to live is a truism. The official record for the length of time that a man can go without inhaling is 6 minutes 29 $\frac{2}{5}$ seconds. Few of us can manage three minutes, however. Despite its importance, breathing remains one of the most neglected functions, and outside singing, the elocutionary arts, and athletics, its possibilities are given scant attention. Surely this is all wrong, for respiration primarily determines the life and activity of every cell in the body and brain, and the level at which they function.

Most people take their breathing for granted as a purely automatic function over which they have, and need exercise, little control. But experience in those fields where respiration is of influential importance such as singing or field athletics, shows that triumph belongs to those who have consciously attained a degree of breath control. If correct breathing is of value in these specialized phases of living, can it not be of equal value in the pursuit and maintenance of health? The answer is that we can not only be better in health but in mind and outlook by giving some daily attention to how we breathe.

Deep Breathing for Vitality and Stamina

Very few people use the full capacity of their lungs or understand how vital an effect their breathing has upon their physical and psychical well-being. We must breathe to maintain the fire of life within us. Body heat and energy come from the oxidization (i.e. burning up) of substances derived from food in the tissues. Oxidization can only take

place in the presence of oxygen conveyed from the lungs, and obtained from the air we breathe, by the blood. The more fully we breathe, the more oxygen is available and the brighter glows the fire of life. Other things being equal, we have more energy, more vitality, and more stamina, when we breathe fully.

The provision of abundant oxygen and other gaseous elements found in air has a dynamic effect upon every part of the body, tissues, nerves, and glands, and raises their level of activity and harmony. A full, deep inhalation also requires the complement of a full, deep exhalation. In exhalation the lungs play a significant role as eliminative organs. They remove the carbonic acid gas and spent volatile elements from the blood, which would otherwise depress and poison systematic operation. In fuller breathing, therefore, we invigorate the bloodstream and raise the balance of pure oxygenated blood as against impure.

Deep Breathing Facilitates Organic Working

This is not all. The act of respiration has a profound influence on organic working. In effect, by breathing we draw impure venous blood to the lungs for purification. The impure blood collects in the reservoir of the great veins to the right of the heart, and is circulated via the heart to the lungs. When the lungs are filled with fresh air the blood they contain exchanges its waste impurities for oxygen, etc. The lungs are thus a temporary reservoir of pure blood which then enters the heart for distribution around the body.

Shallow, unconscious breathing tends to foster too much impure blood in the great veins. There is a growing pressure on the heart. But full breathing reverses this. It makes the work of the heart in distributing the blood easier, and from this follows the reflexes of eased pressure on all associated organs.

Respiration and the Mind

Apart from effecting better physical functioning, full use of the lungs has a stabilizing effect upon our emotions

and psychical state. Excitement, fear, worry, and anxiety and other forms of emotional disturbance tend to go hand in hand with shallow, rapid, and negative respiration. Often our physiological reactions to emotional tension stimulate rapid, poor breathing. But if we deliberately and consciously begin to employ a full breathing rhythm, our fears are more easily mastered, and we have greater control over them. Breath is life, and to the extent that we can draw upon it positively, we can and do infuse our beings with new dynamic power for health and happiness.

Our breathing rhythm seems to be determined by prenatal influences. The respiratory movements are purely involuntary. If we let them remain so, the tendency is for the respiratory muscles to lose their efficiency and our breathing to become shallower as we grow older. Nevertheless, these muscles and the respiratory organs can be and are remarkably responsive to the control of the will. By setting out consciously to improve our breathing, we set out to build up new vitality and health.

How to Breathe Correctly

The basic posture for good breathing is the same in all positions. We need to lift the chest wall high, to arch the diaphragm or midriff, to throw the shoulders back and down, and then concentrate with body relaxed upon filling and collapsing the lungs within the chest cavity as fully as possible as we breathe. We can breathe out through the mouth on occasion if we like, but the inhalation should be nasal, if only to ensure that the impurities present in the air are efficiently trapped, and the air itself properly warmed before it enters the lungs.

Breathing intended to re-educate the lungs has a four-phase rhythm: viz, inhalation—pause—exhalation—pause. A good exercise is: Inhale slowly and steadily, mentally counting six, seven, or eight; hold the breath in a moment; then exhale slowly to the mental count; hold the breath out a moment; then repeat about fifteen to twenty times at a time. Such a simple exercise can be done on wakening, and just before going to sleep. It can also be done during the



P. S. Khambata

Drinking plenty of pure water ensures good health.

day in almost any posture where the lungs are free to work unimpeded and the body relaxed.

Breathing Exercises for the Aged

Older people who find that "their chests have slipped" will probably do the exercise best by lying flat on the back, aiding the breathing by gently but firmly holding the diaphragm in and up with the hands on the midriff. Once the basic rhythm has been mastered, variant breathing gymnastics can be practised. For instance, the exhalation can be made twice as long as the inhalation, or vice versa. The pauses can be lengthened and varied, though this should not be overdone. It is often helpful to inhale jerkily as if sobbing, and then let the breath out with a long steady sigh. With the passing of years, there is a grave tendency for debris to accumulate in the lung tissues, and to vary the breathing helps to loosen and excrete some of this.

As the respiratory organs respond to consciously controlled breathing, it will be found possible to unite breathing exercises with physical exercises. One of the best ways is to link the respiratory rhythm to stretching and rhythmic movements—inhaling on the stretch, holding a moment, exhaling on the relaxation, and holding out for a moment when the body is at rest.

WE MUST EAT AND DRINK

It is a happy circumstance that Nature has seen fit to make eating and drinking enjoyable. They are necessary actions which recur so often. Indeed the pleasures of the table are such that few of us can resist all the time the temptation to pander to acquired tastes and live for their satiation. In doing so, however, we run the risk of forgetting that primarily we must eat and drink to live and to keep well.

Appetite and hunger are relatively easy to satisfy, demanding little more than a full stomach. To civilized man, however, they are poor guides in choosing the foods and drinks to meet his real nutritional needs.

Even in these days of rationing and restriction the average adult consumes his own weight in food and drink at least once every thirty days, and exercises considerable freedom of choice of what he takes. From what he eats and drinks his body will absorb what it needs for the repair and renewal of its substance, for the generation of heat and energy, and for its health-protection and regulation. The extent and success to which these needs are met, depend primarily upon the kind, quality, and quantity of the raw nutritional materials which we get in our meals.

As far as kind is concerned, the practical import of all our modern knowledge on nutrition is simply that our daily menu should be based on fruits, fresh and dried, salads, fresh vegetables, milk, dairy produce, eggs, whole wheat bread, whole cereal foods, and plant proteins. At least up to ninety per cent of the menu should consist of these foods if the real nutritional requirements of the living body are to be met.

Quality is important because the quality of our food largely accounts for its content of vitamins and minerals. Here, our new knowledge of nutrition indicates that the fresher our foods, the better. Admittedly, modern methods of food preservation in canning, freezing, and storing, go far in minimizing vital food losses, but losses do occur. As far as is practical we should at least eat fresh foods in their season, and as soon after they are gathered as possible. In stored foods, such as cereals, quality may be related to the wholeness of the product. Brown rice is of greater nutritional quality than polished; brown sugar than white; whole wheat bread than white, and so on.

Danger of Over-Eating

When kind and quality are given precedence, quantity is of less importance. To eat and drink too much over-burdens the digestion, impedes the efficiency of the body, and pre-disposes it to breakdown and disease. To eat less than capacity brings no such perils in its train. Physically and mentally we are healthier and more efficient when we eat

and drink rather less than is necessary to maintain our full body weight for our age, height, and sex.

Apart from this, the amount of nourishment we take should be related to the work we do, and the clime and season we are living in. Broadly, the more active we are physically, the more food we need. The colder the clime or the season, the more fuel food we require to maintain body heat.

Phases of Digestion

Digestion is a four-phase process. It begins in the mouth where by mastication the cells of food are torn open and exposed to digestive secretions, and mixed with the secretions of the salivary glands which begin the conversion of starch into assimilable sugar. The second phase begins in the stomach when gastric secretions convert other food elements, particularly proteins, into assimilable form. The third phase goes forward in the duodenum in which bile from the liver begins the conversion of fats and juices from the pancreas and has a leavening effect upon the digestion of the food mass as a whole. The fourth phase embraces the completion of digestion, and the assimilation of nutrients in the intestines, complemented by the elimination of wastes.

Slow Eating Essential

Each phase depends upon the successful conclusion of the preceding ones. But the key phase is mastication. Habits which contribute to skimpy mastication, hasty swallowing, and gulping down of food are apt to lead to digestive illness in time, to say little of the nutritional impairment of the body all the time. To eat slowly, chewing, and savouring each mouthful, adds to the enjoyment of the food and fosters its perfect digestion.

When to Drink

The habit of drinking with meals is to be condemned chiefly when it leads to premature swilling down of solid food. There is no real physiological reason why food and

drink should not go together, if the food is properly masticated and the drink sipped and slewed around the mouth before swallowing. Any dilution of gastric juices is very temporary for fluid is quickly transmitted through the system. The habit of drinking before or after, courses of solid food is, however, a good one in that it promotes more thorough mastication.

Mealtime Must Be a Happy Time

Again, when we eat, our food should have our undivided attention. No function of the body is more sensitive to our mental or emotional state than digestion. The table is not the place to discuss business or domestic problems,



or to attempt to occupy the mind with reading matter or radio. It is better not to eat at all when emotionally upset or overtired, for the digestion is unequal to the strain put on it. A mealtime should be a happy occasion with mind

fully relaxed. Congenial surroundings, good table appointments and the general atmosphere in which meals are taken contribute much to good digestion.

The frequency with which we eat and drink is a matter of individuality. Most people tend to conform to the rule of "three square meals a day," but this is a rule of habit and convenience rather than of need. Research indicates that many people, particularly women, would do better if they ate more frequently but smaller meals, provided that a good nutritional balance is maintained. On the other hand, older people often find it sufficient to eat full meals at long intervals, with a snack meal or food-beverage in between. The speed of digestion varies, and it is best to eat according to individual prompting rather than to conventional rule.

Preparation of Food

The digestibility of a meal is influenced by the way in which the food is prepared. Cooking is really a process of predigestion. It involves the use of heat to make food elements more easily digested and more palatable. Baking is undoubtedly the best method. Steamed foods are better than boiled. Fried fare should, however, be eaten sparingly since the free fat mixed with other elements has to wait for digestion until it reaches the duodenum. It is not easy to separate the other elements from it in the stomach, and delay generally means trouble.

WE MUST WORK AND PLAY

One of the major keys to normal health and happiness in life is well-balanced activity of body and brain. We get this activity in the forms of work and play. Too much of one and too little of the other, however, ultimately makes us unhappy and unhealthy too.

If we are wise we will look upon work and play not only as necessary activities in themselves but as parts of the same whole. Through them we can find not only health-

ful exercise for mind and muscles but happy satisfaction for our emotional longings and spirit. The truth is that through our work and our play we seek to express ourselves creatively. We use our energies, and our talents and exercise body and brain in ways which are rewarding in increased skill and in an inner sense of mastery over our environment. The two forms of activity are, when properly employed, fully complementary to one another and help us to express our whole beings in living.

Work a Necessity for Good Health

Unfortunately, many of us today look upon work as an irksome task that must be done in order to earn the money to pay for such necessities of life as food, clothing,



Women enjoying their work in the field.

and shelter. Just how much work contributes to our welfare and well-being is not realized until we have none to do. Idleness is often a greater threat to health than infection.

To the individual engaged in useful work which commands his interest and enthusiasm, work is play. His difficulty and danger is not to avoid work but to avoid over-

HEALTH MUSTS

work. But for every man who finds work a joy and a tonic, there are several who find their daily task a somewhat monotonous round of repetitious actions which only the monetary reward makes tolerable.

Right Mental Attitude Important

Much depends upon our inner attitude toward our work, however. Even a monotonous job can be vested with interest when tackled with zest and a healthful outlook. The point is illustrated by the story of the bishop who went around the building yard of a cathedral under construction. To his question: "What are you doing?" the first mason said: "I'm carving this 'ere stone." A second man replied: "I'm helping to build this cathedral." A third answered: "I'm building to the glory of God."

None of the work the men were doing at the time added more than a fragment to the finished building, but the scope of outlook with which they vested their work undoubtedly influenced their happiness and enthusiasm for their work and determined what they got out of it. To those in work which seems pointless or insignificant, one way of enriching it and making it more satisfying is to widen one's horizon and find out just what it means for the finished product.

If you feel that you are just an insignificant cog in a huge machine, you may find it gives a new perspective to your work and its importance to find out just exactly what your contribution to the final product and its efficiency means.

Defeating Monotony

Another way of defeating monotony is to put imagination to work in your job. A young workman was once chaffed for the unfailing cheerfulness and enthusiasm in which he went on fixing similar accessories to similar cars day after day. His explanation was: "Well, I like to imagine the kind of people who'll be riding in these cars. A black saloon, for instance, may be owned by a business man with a pointments to keep. He'll need everything just

so, and I give the screws an extra turn home. Or a sports model—some young chap may break his neck unless this thing I'm fixing stays put and does its job. It helps a lot to put imaginary people into these cars and see them riding around doing their work, having fun and so on—and it helps me to put up with my job." By seeing beyond the smallness of his immediate task, the young workman was able to put enthusiasm into what he did.

Why Play Is Essential

Work can be either mental or physical in the main. Too much of it at a time can lead to an early depletion of the reserve of mental or physical energy. Long hours at uncongenial tasks can also lead to exhaustion from emotional or psychological causes. It is to save us from the consequences of overwork or of emotional rebellion against disliked activities that we need play. Play differs from work in that it is a form of activity which we can choose freely.

Nevertheless, there are certain rules which should guide us.



If our work is largely physical, then it is wise to seek counter-balancing recreation of a mental character; when the duties are mental in nature, we need physical recreation. The real function of play is to balance the stress of active living on the body and mind.

In doing heavy, physical work, the tendency is to exhaust body strength and energy, and also to overstress the "action" and co-ordination centres of the brain. By devoting some hours daily to play of a mental nature, different brain centres are brought into action, and the body is relaxed and rested. On the other hand, sedentary work which stresses brain and nerve, leads to mental fatigue and a sluggishness of organic function. In such cases, play of a vigorous nature is needed to divert the mental stress from the higher brain centres of reason, calculation, and analysis, and to stimulate the body's own action and organic functions.

But true play is more than a counter-balance to work. It is also an outlet for creativeness. The sedentary worker may find enjoyment and health in spending leisure hours at games, hiking, walking and so forth, but he may also find creative joy in a hobby which is largely manual, such as carving, toy-making, and so forth. Similarly, the physical worker should plan his play to afford nourishment and exercise for the unused equipment of his being. Rest can be exploited by such mental pursuits as reading, radio listening, or participation in some art.

To the very young animal, including the human, play is the chief form of activity. But any study of such play soon reveals its serious intent. Young animals play with a concentration and devotion unexcelled. Play is instinctive to them for it is preparation of body and brain for life. To the adult, play should have the same importance. It is something more than mere relaxation or diversion. It is activity whereby we can express ourselves more fully, and in achieving some mastery over the form it takes, we gain both a sense of pleasure and reward.

In effect, play allows us to discharge the tensions generated by hours of work. It stimulates co-ordination of the



Walking is a good exercise for sedentary workers.

function of body and brain, and so brings us to a state of relaxed ease by the end of the day, and makes recuperation by sleep both natural and unfailing. Seen in their proper light, work and play are but the reverse sides of the same medal, and a balanced indulgence in both is vital to physical and mental health and spiritual well-being.

WE MUST REST

Every twenty-four hour day our hearts beat over 100,000 times and send 5,000 gallons of blood coursing through our 12,000 miles of blood vessels. Yet the significant factor in the life of this vital and indefatigable organ is not its work but its rest. Without rest even so active an organ as the heart would fail. This rest it gets in a very brief pause in its expansion and contraction. In it the heart snatches the opportunity to nourish, service, and regenerate itself so that it can serve us day and night without fail.

So long as it can avail itself of this rest period regularly and evenly, the heart can function smoothly. When its rhythm is disturbed, its function falters. Every living organism must have regular, consistent rest to prevent premature wearing out and collapse. What is true of the heart is true of every other part of the human structure and the human being as a whole.

Greater Efficiency Demands Proper Rest

In these modern days of speed and tension the part that rest plays in health and the sound conditioning of body and brain is all too frequently overlooked and mismanaged. Nevertheless, the more we want to do and the more we wish to accomplish, the more important it is to master the secret of relaxation and rest. One of the top secrets of the ability of Winston Churchill to shoulder the burdens of Prime Minister in the last war, lay in his capacity to snatch brief minutes of rest whenever opportunities presented themselves during his day. Often time we spend



M. J. Vyanawalla

Deep sleep brings real recuperation to the body.

in energetic effort might be spent to better advantage resting the brain and the body.

"Rest, after all," says one medical authority, "is an excellent medicine." Certainly, no healing goes forward without rest, but rest is something more than a medicine. It conserves our vital energies, and it affords the body and the brain their most important and vital opportunities for recuperation and regeneration. In active living—physical movement, emotional reaction, and thinking—we are constantly using up our vital forces, expending our energies, wearing out blood and tissue and breaking down body structure.

In quiescent living—rest and relaxation—the trend is reversed. The powers of recuperation, regeneration, and restoration take over. The body no longer expends its living substance but replenishes it, and the more we balance activity with rest, the better able we become to achieve things, and the longer we live. If, however, we attempt to overburden ourselves with work and action without regular rest, we end up with vitality spent and stamina depleted.

The moment we relax active tension in the body and mind by lying down or resting, even though we do not lose consciousness, the blood pressure falls, the heart beat slows, the pulse rate slackens, the nerves relax, and throughout the body every organ and cell begins to work more easily and smoothly. Mentally and emotionally, nervous tension slackens, and instead of being at the command of the mind, the nerves take over the direction of organic function to the end of regeneration. Body temperature tends to rise slightly to speed up physiological processes of elimination and rejuvenation and then to fall.

Depth of Sleep More Important Than Length

It is true, of course, that we get the most complete rest in sleep. It is then that the greater part of repair of body and brain must be done. But how and when we sleep are at our dictation, and too often the hours which should refresh us most are misspent in restless and

tossing nights. Yet sleep we must, for sleep is an urgent necessity to health and life itself.

Scientific studies have amply shown that what counts about sleep as a restorative is not its length but its depth. Sleep may be divided into three periods. First, the time we take to fall asleep, when muscles are relaxed, body position adjusted, mental tensions let go, and emotional problems discarded. Then comes a period of deep sleep, the deepest oblivion during which recuperation is most complete. Finally, there is the period when we awaken from deep sleep.

In the time we need to spend abed we are all individual. But the sooner we fall into deep slumber, the shorter our rest needs to be. People vary greatly in their ability to relax and fall asleep, and the time and rapidity with which they do so, affects the quality of their deep slumber. To sleep well, we need to master the art of relaxing quickly and of dismissing mental and emotional problems from our consciousness.

How to Fall Asleep

Physically, proper diet and regular balanced activity which includes physical exercise will go far in fostering sound, restful slumber. We should aim to finish the day healthily tired without being overtired or overdrawn mentally or physically. Sedentary people will find it helpful to take a brief walk before retiring to bed. Others find a regular routine of toilet, stretching and breathing exercises, and methodical preparations for bed most helpful to their ready relaxation.

Poor sleep comes from going to bed overstrained either by a physical or nervous overtiredness. In such a state, the body is like an overwound watch spring. It finds difficulty in uncoiling and losing tension. For emotional or mental tension, the best relaxation is a brisk walk out of doors before going to bed. For physical overtiredness, it is a good plan to have a soothing warm bath, and then go to bed and listen to soft music over the radio or read

a calming book. Bedtime is the time to read difficult texts, not thrillers or novels, for the effort of trying to follow an abstruse line of thought often provokes sleepiness.

A Common Mistake

Too many people, however, place their faith in rest in sleep alone. We are apt to think there is something lazy or reprehensible about resting during the day. This is a mistake, for short periods of relaxation during the day, when they can be sensibly fitted in with our daily routine, are among the most valuable investments of time we can make for our good health.

The art of ready relaxation and the shedding of all tension from body and brain needs practice. The body needs to be comfortable. One of the best postures for relaxation is to lie flat on the back with the feet and legs slightly raised. But even sitting in a chair can be relaxing if the body is seated squarely and properly supported with chest high, and breathing even.

The trick of dismissing mental problems in a moment lies in concentrating the mind upon the simple action of breathing. Once the body is comfortable and its weight relaxed, the breathing should be deep and full, of even rhythm with slight momentary pauses between the inhalation and exhalation, and exhalation and inhalation. The mind should then mentally follow the inhaled oxygen carried by the bloodstream around the body, relaxing every limb and muscle in turn until the whole body is limp, and a state of sleepiness follows.

The opportunities for practising these rest periods will vary according to the daily schedule. It is always sound to rest after lunch and after dinner for ten to fifteen minutes, and to those who can, especially housewives, the thirty to forty minute afternoon nap should be looked upon as essential to the recuperation of energy, vitality, and steady nerves.



A balanced diet gives us strong bodies.

G. N. Nath

THE BALANCED DIET

S. B. WHITEHEAD, D.Sc.

THE ESSENTIALS OF A BALANCED DIET

NUTRITION may be epigrammatically summed up in the phrase—what you eat, you are. This is often self-evident as far as physique and well-being are concerned. It is not so widely realized that evidence is accumulating that what we eat also has a vital bearing on how we think and the general level of our intelligence. The more we know about nutrition, the clearer it becomes that the foods we eat and their balance are the roots of the matter of total health.

We know that when a child fails to get sufficient milk, vegetables, and fruits in his prenatal diet, he is condemned to a lifetime of poor teeth. If an adolescent girl eats too few green vegetables, whole cereals, dried fruits, eggs, and other iron-rich foods she is likely to develop anæmia. Protruding stomachs, flat feet, poor posture, and sallow skins are signs of malnutrition caused by the omission of vital foods. Rickets, scurvy, pellagra, and beriberi are acute malnutrition diseases caused by the lack of certain vitamins in the diet.

On the other hand, we know that the right diet will build up resistance to such diseases as tuberculosis and rheumatic fever. We know that children who receive a diet rich in vitamin B₁ learn faster and are more intelligent than those on a diet not so rich in the vitamin. But malnutrition or bad nutrition does not always manifest itself in well-defined symptoms of disease. Slight deficiencies of essential food elements may only provoke vague symptoms of below-par health, and for every one who suffers from a well-

defined condition of malnutrition there are six who are also poorly nurtured but only to the extent that they rarely know the full vitality of buoyant health and carefree living.

A Proper Balance of the Right Foods

The truth is that it is not sufficient to eat the right kinds of food. We must eat them in good balance at each meal and in the diet as a whole. We have been subjected to food restrictions of various kinds for some time now. The range of foods available to each one of us both in amount and in variety has been limited and yet similar. But within these limits we have been able to exercise a freedom of choice, if only the negative choice of not eating a food we do not like, and it is apparent that many thrive better than others in terms of resultant strength and well-being. This is surely because individually we still largely determine not only what we do eat but in what combination.

The major essential of a balanced diet is that it should at one and the same time protect and maintain the health of the body and nourish it.

In practice, it is primarily more essential that what we eat should protect our health and keep us well than that it should nourish us. Unless the body is functioning healthfully, it cannot make the fullest and best use of the nutritive values of food. The more restricted our bill of fare, the more important it is to put health-protective foods before the purely nutritive. The fact is that the vital internal secretions such as hormones, enzymes, antibodies, etc., which are responsible for the healthful action of the body, have to be elaborated from our daily fare just as much as substances for body building, repair, and for energy and heat.

From our modern knowledge of nutrition we know that while some food elements are both health-giving and nutritive, many contribute outstandingly in one direction only. Thus the chief health-protective food elements are vitamins, minerals, cellulose roughage, enzymes, and water. The essentially nutritive factors are proteins, carbohydrates

(starches and sugars), and fats. The fundamental basis of good dietary is a satisfactory balance between these food elements.

How Nature Helps

The simplest solution to this problem of fundamental balance is to make foods which are balanced in themselves the basis of the diet. There is no great difficulty about this, for Nature herself balances each of her foods to play their part in healthful nutrition. We can seldom improve this balance by artificial processing. For example, we know that the healthful digestion and assimilation of starch depends largely upon the presence of sufficient vitamin B₁. In such starchy foods as cereals, Nature places enough vitamin B₁ alongside the starch in the whole grain. By processing or denaturing the grain in its conversion to flour or edible fare, this happy combination of essential health-protective vitamin with nutritive carbohydrate may be, and often is, impaired to the detriment of our nutrition and health.

Similarly, in natural fats we find vitamin A is present. In everyday living all that this means is that the foundation of healthful daily fare lies in a sufficiency of natural, unprocessed foods. In the natural foods—whole grain cereals, fruits, vegetables, pulses, nuts, dairy foods, etc.—Nature assembles all the food-elements necessary to good nourishment together with all the elements essential to their utilization and protection of health.

Vitamins, minerals, food-principles, cellulose roughage, etc., are the food-elements manufactured by Nature and present in all natural foods where they can do most good in assisting the body to utilize the nutritive factors. Every natural food is balanced in this respect, and up to eighty per cent of our daily fare should be chosen accordingly.

Planning for Nutrition

But natural foods are not balanced in a nutritive sense. Some are richer in protein than others, some in carbohydrates, and some in fats. In order to meet the nutritive

needs of the body wisely and completely it is necessary to eat a variety of foods in a combination calculated to satisfy its relative requirements. For this purpose it is convenient to group foods according to their content of the various food-elements.

The groups are: 1. Foods rich in protein, the substance needed for cell-renewal and repair; 2. Foods rich in carbohydrate (starch or sugar), the chief source of food-energy; 3. Foods rich in fats, needed for body heat and energy; and 4. Foods rich in health-protective regulatory substances—vitamins, minerals, cellulose, water, etc.

The groupings are shown in the accompanying chart, and each group may be sub-divided into the indispensable foods for well-balanced dietary, and the supplementary foods which may be dispensed with if necessary but which civilized custom has made popular. This chart provides a key to well-balanced meals.

If we choose some food from each group, we shall have protein, carbohydrates, fat, and regulatory substances in our meals.

No very precise measurement of quantity is needed. In practice, it will be found that combinations of foods from the four groups selected by the normal person provide meals which are surprisingly well balanced, digestively and dietetically.

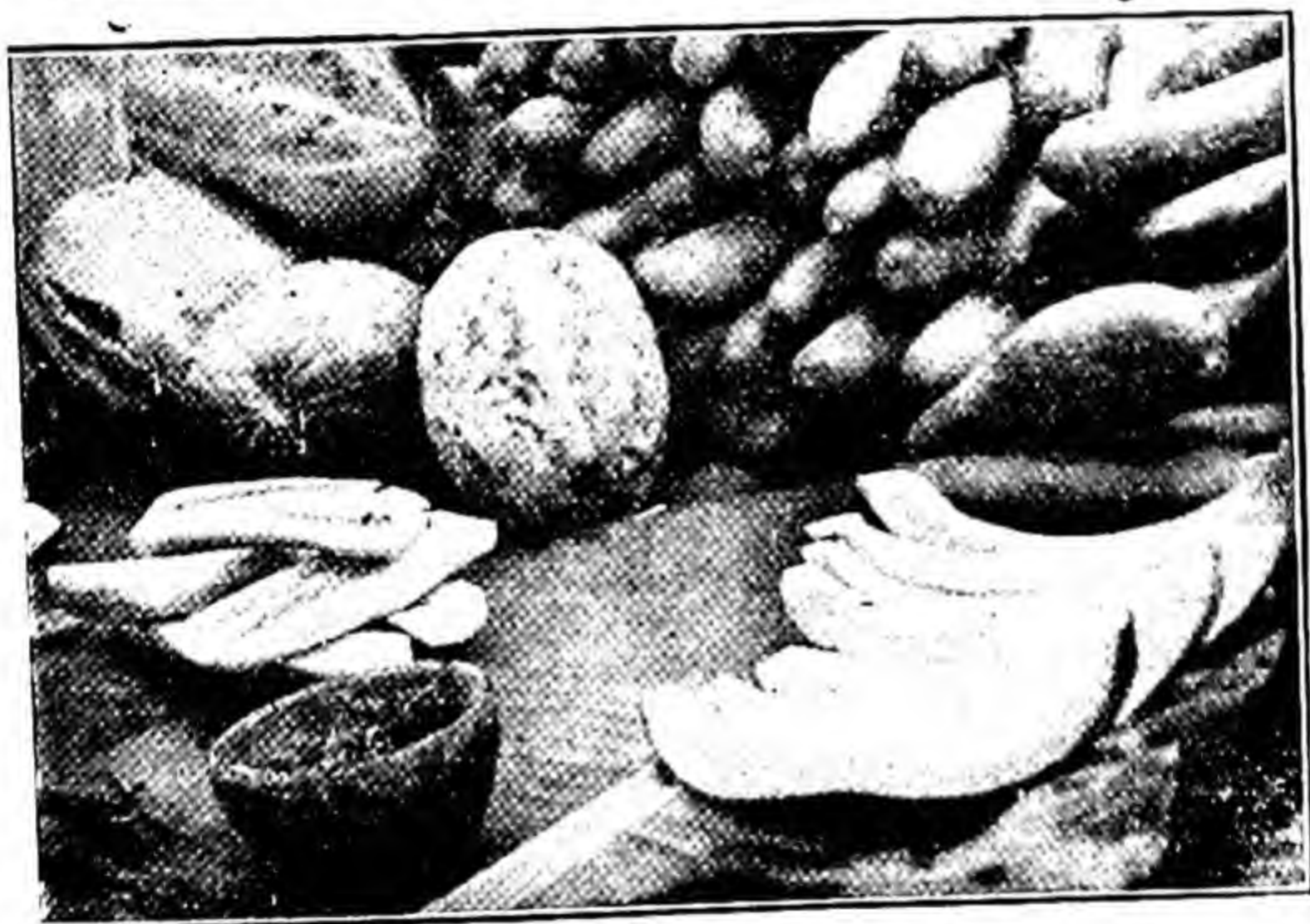
ESSENTIAL FOODS FOR A BALANCED DIET

Foods rich in Protein	Foods rich in Carbohydrates	Foods rich in Fats	Foods rich in Regulatory Substances
Cheeses, all kinds Eggs Milk Nuts Pulses Whole cereal foods Whole grains	Whole grains Whole cereal foods Wheatmeal Breads Brown Sugar Honey Dried Fruits Ripe Fruits Potatoes Root Vegetables	Butter Cream Milk Olives Olive Oil Nuts Cheeses Egg Yolk Peanuts Vegetable oils Vegetable fats	Whole cereal foods Whole grains Milk Fresh Fruits Dried Fruits Fresh Vegetables Salad Vegetables Leafy greens Natural foods

WE DON'T EAT CALORIES

In these days of food-consciousness, we hear and read much about calories. The term crops up in our newspapers, in government reports, and in radio talks and conversation.

The basic fact about calories is that we don't eat them. We eat foods. Calories are only convenient units by which the amount of heat (or energy) provided by foods is measured. A calorie is the amount of heat required to



N. G. Shah

Most foods provide some calories.

raise one gram of water one degree centigrade. When foods have been assimilated into the body they are oxidized or burned up at the cells and heat is thereby released. Much of the heat goes to maintain the internal warmth of the body at a steady 98 degrees Fahrenheit. Some of the heat is converted into energy for movement and activity.

Even when asleep we use up to 65 to 70 calories per hour and this lowest level of energy production is

termed the Basal Metabolism. The more active we are, the greater the need for calories. A sedentary man needs fewer calories than an athlete or a labourer. A small man needs fewer calories than a big man because he has less body surface and loses heat less quickly. In cold weather, we all tend to need more calories than in warm.

Why We Lose and Gain Weight

If we eat food which provides fewer calories than we expend in daily living, the body will draw upon its own reserves and burn up some of its own substance to make up the balance. One result of this is that we lose weight. Conversely, if we eat more food than we burn up in heat and energy, the body will store the surplus, generally as fat in the tissues, and weight will go up. This fat tends to accumulate where the tissues and muscles are used the least. By controlling our calorie intake, therefore, we can control our weight and bodily contours.

But we cannot live on calories alone. Most foods provide some calories but the calories are obtained from the three chief organic food substances—protein, carbohydrates, and fat. The only calories of healthful value to us are those obtained from foods which are thoroughly digested and assimilated. We know now that the successful conversion of protein, carbohydrates, and fat, depends upon an adequate balance of such food elements as vitamins and food minerals being present in the diet at the same time.

Again, it is important that the foods rich in calorie providing substances should be eaten in the proper proportions. One gram of protein on combustion yields 4.1 calories. One gram of carbohydrates also yields 4.1 calories. But one gram of fat yields 9.3 calories, more than double the yield of proteins or carbohydrates.

Protein's Primary Function

The primary function of protein, however, is to provide the raw materials for cell repair and renewal. It is

unwise to rely upon protein for food-energy, partly because its metabolism is accompanied by acid-forming reactions, partly because excess protein is apt to be embarrassing to healthful body working, and partly because protein foods are relatively expensive.

Fat-rich foods are important sources of food-energy or calories. We need a certain reserve of fat in the body to protect organic function. But fats, like proteins, are relatively expensive. Carbohydrate foods are rich in sugar and/or starch, and are our cheapest source of calories. It is often tempting to use them excessively, as fill-up foods, at the expense of proteins and fats, and this is something which must be resisted.

The Ideal Proportion

In terms of calories, we should seek a proportion of approximately 1 of protein to 2.25 of fat and 4 of carbohydrate. This should be sufficient to meet our needs.

The conversion of our food calories, however, into heat and energy, is dependent upon good digestion and assimilation and the neutralization and elimination of the residual wastes produced in metabolism. These functions depend upon sufficient vitamin- and mineral-rich foods being eaten along with proteins, fats, and carbohydrates at the same meal.

THE ENERGY VALUE OF SOME EVERYDAY FOODS

In calories per 100 grams (3½ oz.)

Olive Oil	930	Wheat flour	361	Eggs	161
Fish Liver Oil	930	Pulses	348	Prunes	151
Nut Butter	930	Honey	294	Broad beans	109
Margarine	780	Dates	293	Bananas	108
Butter	772	Jam	286	Parsnips	98
Nut, average	650	Sardines	277	Green peas	89
Chocolate	554	Raisins	263	Potatoes	73
Cream	508	Figs	244	Milk	67
Cheese	427	Bread, white	229	Onions	50
Dried Milk	469	Apricots	229	Apples	47
Oatmeal	411	Bread, brown	223	Oranges	40
White sugar	410	Salmon	223	Cabbage	32
Brown sugar	402	Herring	200	Cucumber	11
Cream cheese	385				

YOU AND YOUR PROTEINS

The simple act of living entails wear and tear for the body fabric. All the time its cellular structures are being broken down and worn out. All the time some body cells are being repaired, renewed, and built. Not all parts of the structure wear out at once, or at the same rate. The cells of the bones, for example, are rebuilt at a slower rate than those of the flesh. The raw materials for this constant body-building come from food, and the chief body-building food elements are the proteins.

Proteins are complex molecules of carbon, hydrogen, oxygen, nitrogen, and certain minerals such as sulphur and phosphorus. In the first place they are manufactured by plants which are capable of converting ammonium and other mineral salts obtained from the soil into protein molecules. Human and animal organisms cannot do this. In consequence, we are dependent upon plants and plant products for our nutrition.

Proteins are present in all plant and animal cells. They form the essential part of the living protoplasm of the cells. But whereas fats or carbohydrates wherever found in the body are similar, proteins found in cells in different parts of the body, even within the same organ, may be different according to the biological specificity of the particular cells.

We know that this is so because chemically, each protein is made up of simpler molecules known as amino acids. These amino acids may be termed the "building blocks" of the body. The first was discovered in 1820. Now we know that there are at least twenty-five, of which twenty-two have been identified. These amino acids may be linked together in myriads of combinations, and thus give rise to the infinite number of proteins to be found in Nature.

As far as human nutrition is concerned, at least eight of these amino acids are so essential that the absence of one of them over a period in the diet would cause death. These essential amino acids must be obtained intact from the foods we eat. We cannot build them up for ourselves either from inorganic salts or from other amino acids. It is

customary to divide foods into those containing the proteins made up of the essential amino acids, and those which are not. The first group are termed first-class protein foods or complete proteins to distinguish them from the rest.

The chief first-class protein foods are those of animal origin—eggs, milk, cheese, meats, etc. The proteins in vegetable foods, although extremely varied, are generally lacking in one or more of the essential amino acids. The vegetarian, therefore, needs to take far more care in balancing his diet than the meat-eater if his real protein needs are to be satisfied. His task is simplified when he includes eggs and dairy products.

The most important vegetable proteins are those contained in whole grain cereals, pulses, and nuts. But every vegetable and every fruit provides proteins, although their



Nuts are a good source of protein.

amino acid content may be incomplete. By eating a variety of foods, everyone assures himself of his protein needs being more adequately satisfied.

When we eat protein-rich foods, the proteins are digested, first by the gastric juices in the stomach and then

by enzymes secreted by the pancreas and the intestinal wall. They are broken down into smaller and smaller molecules, peptides, proteoses, and peptones and finally into their separate amino acids. The amino acids then pass into the blood and are distributed around the body.

One of the problems which has only been partially solved, however, is just how much protein food we need to keep us fit.

Broadly, the present rationing of first-class protein foods is designed to meet the varied needs of a family according to their age and biological requirements. We have no need to set about numerous calculations on the protein content of our meals to ensure that we have enough. The practical solution is to include at least one protein-rich food in each meal, and add to it a reasonable variety of other whole natural foods. Thus a breakfast of whole cereal, fruit and milk; or a lunch of salad, cheese, wheatmeal bread and butter, and sweet; or a dinner of protein savoury, vegetables, sauce, and dessert, would give adequate protein for the body's needs.

On the other hand, too much protein can be harmful. The body can convert some of it into energy, but in the process, acid-forming substances are released and too much protein is associated with acidity, kidney trouble, and high blood pressure.

FATS AND PHYSICAL FITNESS

At first thought, few people would advocate fatty foods as advantageous to physical fitness. They are generally associated with over-weight and sick, flabby tissue. Yet one of the significant facts emerging from our experiences under food rationing, is the importance of a sufficiency of fats to protect health and maintain fitness apart from their contribution to our nourishment.

It is, of course, true that fats provide calories (food energy) in their most concentrated form. One gram of fat supplies 9.3 calories against the 4.1 calories provided by a similar amount of sugar or starch. And this form of food-energy is readily stored in the tissues. Thus an excess of

fatty foods can produce over-weight and unhealthy adipose tissue. On the other hand, insufficient fat exposes the body dangerously to infection and ill health.

Fats are formed by the combination of organic acids with alcohols, and are made up of carbon, hydrogen, and oxygen. In metabolism, they are burned up steadily and seem to provide the major source of body heat. The fat elements of our food may be likened to the coals in providing steady intense heat, while the sugar and starch elements are the flames in the fire of life providing the more volatile heat which we expend in energetic activities.

Apart from this major contribution to our nutrition, fats perform other invaluable functions in the body. They replace the essential fat in the tissues of all organs and

Composition and Food Requirements of a 154 Pound Man.

Composition of Body

Water 70% - 1078 lbs

Hydrogen
Oxygen

Protein 19% - 2926 lbs

Carbon
Hydrogen
Oxygen
Nitrogen
Sulphur

Fat 7.5% - 1155 lbs

Carbon
Hydrogen
Oxygen

Carbohydrate 5% - 77 lbs

Carbon
Hydrogen
Oxygen

Mineral (Ash) 3% - 462 lbs

Calcium
Chlorine
Fluorine
Iodine
Iron
Magnesium
Phosphorus
Potassium
Sodium
Sulphur



Daily Intake of food

Water 8 lbs

Protein 2.5 oz
Fat 2.8 oz

Carbo-
hydrate 1 lb

Mineral 4 oz

muscles, which does so much to protect them against mechanical injury, and against the sudden changes of temperature and irritation. A sufficiency of fat is essential to nerve health and smooth nervous function. It is essential to skin health and beauty, and the organic acids of fats are known to be factors in preventing certain diseases.

When the body receives insufficient fats over a period, it naturally becomes more susceptible to temperature changes, tends to lose weight, and to have its disease-resistance undermined. This is particularly true in regard to diseases such as tuberculosis. Fat-deficiency is also associated with certain eczematous skin diseases. As might be expected, a deficiency of fat in the diet at such critical nutritional stages of life as infancy, adolescence, pregnancy, and lactation, gravely threatens wellbeing.

On the other hand, too many fats can also be harmful. Apart from leading to overweight and excessive tissue, an excess of fat tends to create a general condition of acidosis or ketosis, sooner or later followed by illness.

The truth is, however, that the quantity of fat we eat is less important than its quality. In practice, it is the kind of fatty foods we get that matters most in determining our fitness. Quality in fats is largely a matter of their vitamin content. Quality fats are those rich in vitamins A and D.

Thus the best form of fat is that found in milk and its products, cream, butter, and cheese. Egg yolks yield an excellent fat also. On the other hand, lard has no vitamins and is an inferior fat. The same is generally true of most refined cooking fats. At one time margarine was without vitamins, but now these are added and margarine is considered equivalent to butter.

Most flesh fat foods are acid-forming, while fish liver oils are apt to produce anorexia and gastric discomfort if taken too liberally.

The amount of fat needed every day in healthful nutrition has never been accurately assessed.

In the last analysis, however, the good we get from our fat foods depends upon their digestibility. The diges-

THE BALANCED DIET

tion of fats depends chiefly upon the bile and pancreatic juices secreted into the duodenum. Fat digestion, therefore, is apt to take place in the latter stages of digestion, and much depends upon the fat reaching the duodenum separated from other food elements and in a form in which the bile can attack it.

As they occur in nature, fats are in the form of minute globules, each with a tiny envelope. In digestion, these globules remain apart from other food elements in the stomach and are easily digested when they reach the duodenum.

When fat is heated, however, in frying, roasting, or grilling, the tiny globules burst. The fat is freed and tends to soak into the starch and fibres of the food as a whole. As a result, separation of the fat from the other food elements in digestion is rendered difficult and is a frequent cause of gastric distress.

If we wish to make the digestion of fats easy and more complete, we must make sparing use of the frying-pan, roaster or griller, and even then endeavour to cook the food in such a way that a minimum of fat is freed.

DIET IN INDIA

H. C. MENKEL, M.D.

THE PROBLEM OF DIET

THE heart of the food problem is in the villages rather than in the cities. As in the past so it is still true that by far the greater population of India is a village population. The nutritional problem as it concerns India is essentially a village problem. The remedy of India's nutritional deficiencies must be applied, and made applicable to village life if its results are to be really effective.

At the village threshold, however, we meet our real economic difficulty, and become immediately aware that any adjustment or balancing of the diet must be kept within the meagre family purse. This is really a giant task.

If nature had arranged for our nutritional needs so that any one of such staple foods as wheat, rice, "dal," vegetables, fruit, meat, fish, fowl, would in itself supply the materials required for body construction, repair, protection, and defence, then there would be no problem at all, as deficiency diet would cease to exist. Or, if even any two of such foods provided for our needs, the matter of diet need not become the medical, economic, or social problem which it now presents.

Men differ outwardly as to complexion, expression, stature, and temperament. They differ politically, religiously, intellectually, and morally, but their nutritional requirements are the same with certain slight variations due to environment and heredity. Generally and essentially man's food requirements are the same the world over.

Through necessity, custom, and religion, certain differences in practice and food selection have come about; to these variations the body organism has developed a considerable capacity for compensation and adaptation. These

adaptations to food restrictions and conventions are similar to those to which belligerent nations in war-time have to learn to adjust themselves when deprived of normal sources of food supply.

Taking man as he is under the skin, forgetting his exterior and his mental aberrations, looking at him as he then would appear—a living functioning machine—we soon discover that he has certain common requirements for materials in the rough. These are starch, sugar, fat, and protein, which contain sixteen amino-acids, twenty minerals, and about eight or more vitamins. In addition there is required a certain indefinable vital something obtained only from fresh, uncooked foods.

VARIETY ASSURES ALL ELEMENTS

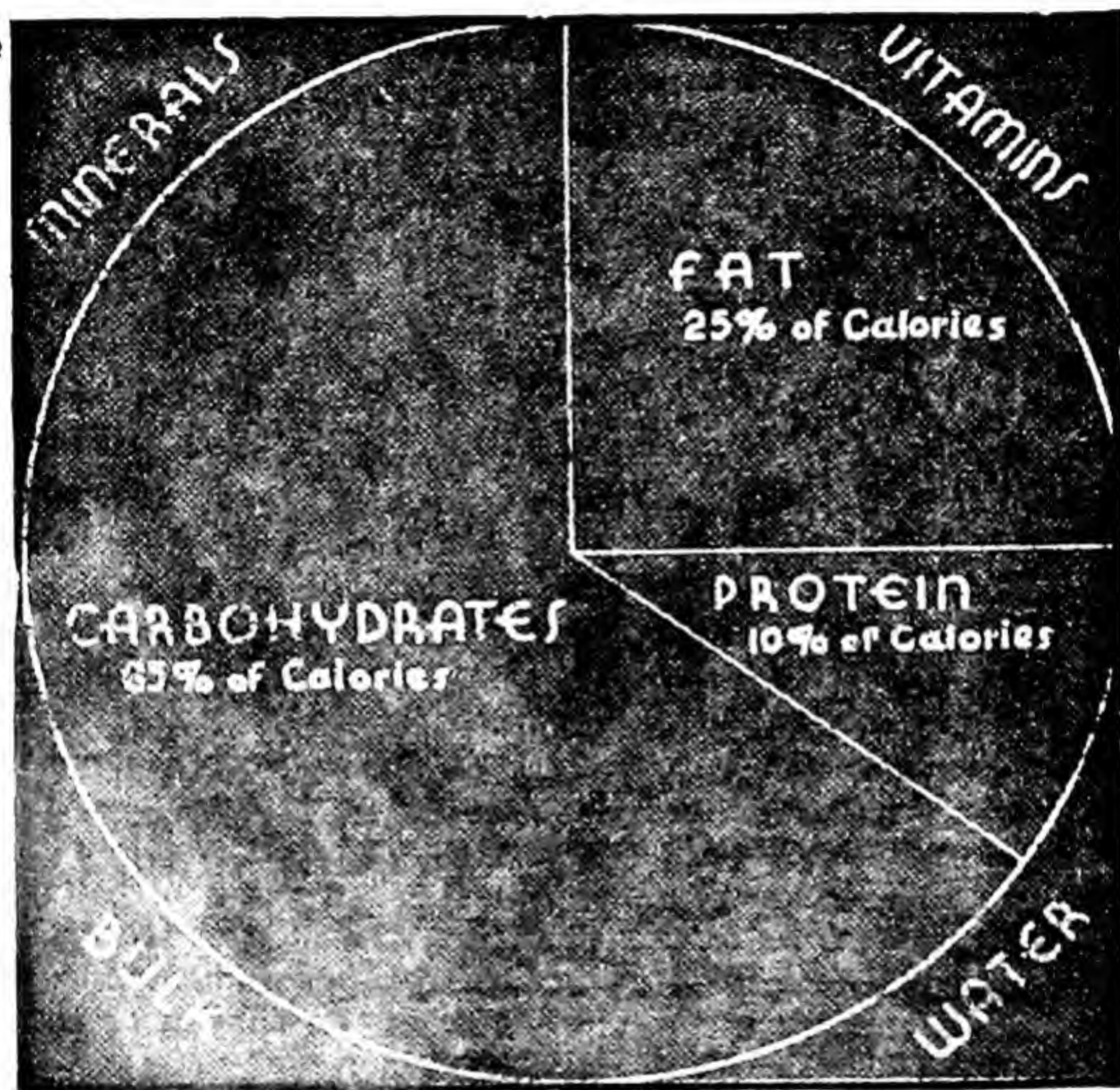
These essential nutritional elements have been so distributed in nature among different kinds of food stuffs, that it requires a certain variety or mixture of food materials in order to obtain and to maintain a balanced and satisfactory, healthful nutrition. Only when the full nutritional needs are fulfilled by the daily diet, can one be equal to meeting any natural physical requirement of work, play, or emergency. This matter of satisfactory nutrition also influences mental capacity and efficiency.

Certain nutritional essentials and their relation to health and disease have now been so unquestionably established that we can unfold the interesting story from the testimony of those whose word carries conviction and authority. We give the opening word on this subject to Britain's Food Minister during the last war:

"Take this business of nutrition that we hear so much about. Science is slowly discovering why it is that a mixed diet, containing food that has not been too much tampered with in its preparation, makes for health, and why a diet that is not sufficiently mixed, or does not contain enough fresh food, makes for ill-health. It is because foods that are 'body builders,' 'body protectors,' 'body workers,' and 'body warmers' are all represented in the mixed diet, and some of them are absent, or are only present in too small a

degree, in the 'deficiency diets.' In other words, those of our ancestors who were healthy ate what is now called a 'balanced' diet without knowing it.

"But, as I say, this new knowledge is of great value in helping us to say if any section of this community is being



The seven essentials of an adequate diet.

inadequately nourished and why, and it gives us equally valuable help as to how best to remedy the defect. Certain important principles emerge. One is that the simpler and more restricted the food, the less must we interfere with its nutritive value, whether in its manufacture or in its cooking; in this case bread must be made from the whole of the meal, potato must be the whole potato, and the rice

must be the whole of the rice. If on the other hand, the articles of food are widely assorted, deficiencies in one or two are easily made good in the others. You can 'balance' your diet in either case, but it is clearly the poor man's table that needs the investigations of science, and not the table of the well-to-do."—"Health and a Day," pp. 105, 106.

Furnas, in his book, "Man, Bread, and Destiny," has well stated the relation of food to heredity: "As far as any experimental evidence goes, the normal characteristics of an animal are dictated by heredity. Food partaken during life is an important item of the environment which determines whether these specifications may be filled or not. A certain man may be genetically equipped to reach an adult height of five feet eight inches. All the food in the world will not make him grow five feet ten inches, nor can he, by taking thought, 'add one cubit to his stature.' However—and here is where a great deal of confusion originates—if the youth's food is deficient in quality or quantity, he may never come up to his normal, foreordained achievement of five feet eight inches. He may only grow to five feet six inches."

FOOD FACTORS AND HEREDITY

Food is the factor which, after heredity, or in spite of it, determines how and what we are to be, and perhaps of what disease we will die and what age we may attain.

The almost mathematical relation between defective food and diseases of various kinds as observed in India has been made abundantly clear by the splendid research work at the Government of India Nutritional Research Laboratories, located at Coonoor, South India, and studies of a similar nature at other centres. This work, and its important health-preserving results, needs to be popularized and broadcast everywhere so that people may profit thereby.

We shall let the pioneer and the pathfinder of this research in India, Sir Robert McCarrison, tell us about the nature of that work, by quoting extracts from a farewell

address delivered by him at Madras, and reported in "The Oriental Watchman and Herald of Health," for May, 1935:

"My work has been to learn how diseases arise, and in particular to learn how perfect food is concerned in keeping the body in perfect condition; and per contra, how imperfect food is concerned in causing it to work inefficiently and in consequence to go sick.

"In Coonoor, where my laboratories are located under conditions of the most perfect hygiene, I keep about 1,000 stock rats for my experimental work. They live in large, roomy, comfortable cages filled with straw, and they are exposed daily to the sun's rays. This stock is fed on a diet similar to that eaten by certain races of Northern India, among whom are to be found some of the finest physical specimens of mankind. The diet consists of whole wheat flour, unleavened bread ("chappatties") lightly smeared with fresh butter, sprouted Bengal gram (legume), fresh raw carrots and cabbage "ad libitum," unboiled whole milk, a small ration of raw meat with bones once a week, and abundance of water, both for drinking and washing purposes. During the past four years there has been no case of illness amongst these rats, no deaths from the natural causes in the adult stock, and, but for a few accidental deaths, no infantile mortality. Disease has been excluded almost completely by minute attention to three environmental conditions: cleanliness, comfort, and food.

"Turning to my experimentation rooms. Here are the same animal houses, the same cages, the same scrupulous cleanliness, the same exposure to the sun's rays. But the animals are fed on food which is faulty in one way or another—deficient in vitamins, in mineral salts, or in both—containing too much of one thing or too little of another. This is the main regard in which these animals differ from the well-fed stock. Further, as my business is to learn how the foods eaten by the people of India are related to disease, the materials entering into the various faulty dietaries are usually those in use by people in India. These are so combined as to form one-sided dietaries disproportionally

rich in starch, and lacking in certain elements and complexes necessary for normal nutrition.

"During the past four years, over 3,000 of these improperly-fed rats have been examined after death: that is to say, during the same period in which the well-fed rats remained so free from disease. The following are the morbid states we found amongst them: Pneumonia and other diseases of the lungs; disease of the nose and the passages leading from it; diseases of the ear causing pus formations; adenoids; diseases of the eye, which may lead to actual blindness; diseases of the stomach and intestines, such as inflammation of the bowels, and ulcers; stone in the bladder; premature birth of the young, or their death in the mother's womb; diseases of the skin, such as loss of hair, dermatitis, and abscesses; anæmia; dropsy; enlarged glands; goitre; neuritis; beriberi; disease of the heart. And when other animals, such as guinea pigs, are improperly fed, scurvy, decaying teeth, rickets or softening of the bones, colitis, dysentery, and other diseases occur amongst them.

"There is another regard in which the ill-fed rats differ from the well-fed ones; the former are often nervous, irritable, and if they live together in colonies, the stronger often prey upon the weaker; the well-fed ones are placid, good-tempered and tractable.

"If it is possible to keep animals practically free from disease, in the way described, it must be possible to do so also in man. What proof have we that it is possible in man? One cannot take batches of children and deliberately feed them under controlled conditions on faulty food. And though when I see ill-fed children suffering from many of the ailments which I find in my ill-fed rats I may feel morally certain that these ailments are largely the results of faulty feeding, yet the lay public needs to be convinced that this is so.

"The diet of my disease-free colony of stock rats has the same good characteristics as the diet evolved through the centuries by certain races in Northern India which are distinguished by their fine physique. And these character-

istics are provided when the components of the diet are as follows:

North Indian Diet

- "1. Any good whole cereal grain, such as oatmeal, whole wheat, or unpolished rice, or a mixture of them.
- "2. Whole milk and the products of milk—butter, curds, buttermilk.
- "3. Fresh, green, leafy vegetables, carrots, tomatoes, etc., in abundance.
- "4. Fresh fruit.
- "5. Meat, fish, fowl, or egg occasionally, if desired. These are not necessary if milk is taken in sufficient quantity. These several classes should be the main constituents of any child's food, whether it be a slum-child or a child of the well-to-do, and whether it lives in Europe or in India.

"Have I told you enough to convince you that of all the medicines created out of the earth, food is the chief? Have I told you enough to thrill you with the wonder of your own bodies, and of the things that the earth provides for its nourishment? Have I told you enough to give you some idea of what I and others have been trying to do all these years? Have I conveyed to you something of the glamour, of the wonder, of the all-absorbing quality of research? Have I made you realize that the most any of us can do is so little in comparison to that remaining to be done?" That which now remains to be done is to give a practical application to all this valuable nutritional research.

"The first need, in my view, is to make a nutritional survey in each province so as to discover what are the chief deficiencies in dietary; the medical authorities should then meet the agricultural experts to decide what crops, including fruits and vegetables, should be grown to supply the missing elements. The approximate quantities needed

should be indicated, and the agricultural staffs, acting along with the rural development authorities, should then encourage, by all means in their power, the growth of these crops."

Whatever food practices may have become established in any part of India, or whatever the conditions which have necessitated these practices, there are, as is now well recognized, essential foods which every mother's son and daughter of India requires for normal physical and mental welfare. Here, then, are the foods (listed with determined amounts) which somehow, and at some time, must enter regularly into the national daily diet of this country, if the diet is to agree with the findings of universal nutritional research.

A BALANCED DIET

Milk, 8 to 16 ounces.

Butter or "ghee," 2 ounces.

Cheese or milk curds, 4 ounces.

Green leafy vegetables (some uncooked), 4 to 6 ounces.

Non-leafy (root) vegetables, 6 to 8 ounces.

"Ata," or other whole grain, 8 ounces.

Fresh fruit, 2 ounces.

The foods mentioned contain all the elements called proteins, vitamins, minerals, amino-acids, vital factors, also the heat and energy-producing carbohydrates. Without these growth-promoting and protecting factors, normal life and health are not maintained.

To these basic foods may be added, if desired, or if means are forthcoming, other foods for further strengthening or varying the diet, such as meats, fish, fowl, eggs, and a variety of vegetables, pulses, choicer fruits, cereals, and many prepared dishes.

The Rice Diet

A very large percentage of India's population subsists upon rice as the staple and main article of diet. Small

quantities of leafy and non-leafy vegetables, pulses, and oil are added; but the outstanding and determining ingredient is rice.

The following list represents the actual composition and quantity of each ingredient, as constituting the daily diet of many of the needier and humbler of India's millions:

Rice	20 ounces
Underground (root) vegetables	3 "
Pulses	1 "
Leafy vegetables	1 "
Oil and fats	0.5 "
Fish, meat, or eggs	0.5 "

When this diet is checked by the known standards of normal, sufficient, and ample diet as given previously, it is found to be seriously lacking in vitamins, such essential minerals as calcium, phosphates, iron, and satisfactory protein.

Mothers bearing children on such a diet cannot give birth to normal offspring. Children are doomed to a defective development, and adults are enfeebled and become prone to various physical ailments resulting in a low working and earning capacity.

All this is consequent on insufficient daily supply of vitamins, minerals, and the right kind of protein. How then can this situation be definitely, effectively, and economically altered? It can be effectively altered, but not as economically as the situation demands. It would necessitate the earning returns of the people to be sufficiently increased to provide for the addition to the rice ration of the following food substances as a minimum requirement: 8 ounces milk, 10 ounces combined vegetables (with special emphasis on carrots and green leafy vegetables), 2 ounces of fruit, and 2 ounces of butter fat. The protein defects of rice as a cereal might be lessened by substituting whole wheat for a portion of the rice.

These additions to the standard rice diet would give new procreative virtue to the potential and the expectant

mother. The developing child would have a greatly increased mental and physical life expectancy, while to the adult it would mean effective medicine for his many ailments and handicaps.

ANIMAL PROTEIN DIET

The following two diets have been recommended by the Public Health Service of Delhi Province, and appear in literature circulated by that office.

EUROPEAN (man)

INDIAN (man)

	For a sedentary life	For an active life		For a sedentary life	For an active life
	Ozs.	Ozs.		Ozs.	Ozs.
Fish	4	4	<i>Ata</i> (wholemeal) or		
Meat	6	6	Rice	10	12
Vegetables:			(home pounded)		
Green leafy	4	8	Millet	5	6
Non-leafy	8	8	Milk	8	16
Milk*	8	10	<i>Dal</i>	3	3
Butter*	2	2	Vegetable oil, or <i>ghee</i>	2	2
Cheese*	1	1	Non-leafy vegetables	6	8
Eggs*	2	3	Green leafy vegetables	4	8
Bread	8	12	Fruit	2	4
Sugar*	1	3	Sugar	-	-
Fat*	$\frac{1}{2}$	$\frac{1}{2}$			
Fruit	2	8			
Flour*	1	2			
Net calorie value	2,420	3,000	Net calorie value	2,440	3,000

*Includes amount used in cooking.

These two suggested diets for Europeans and Indians are evidently based on research work using animal flesh protein as the main source for this nutritional factor. Both diets reflect the European preference for high protein ration and for animal flesh as a preferred source for satisfactory protein. These diet outlines are therefore best suited to

those communities in India which include fish, fowl, meat, and eggs as a regular part of their ration.

It may be advisable to mention that the protein portions called for in both the Delhi outlines being on the liberal side, the quantities indicated should not be exceeded. One of India's serious food defects is the inadequate supply of satisfactory protein, particularly for the non-flesh eating communities, but this defect cannot be remedied by advocating the use of animal flesh, for there are large communities whose convictions against such practices would compel them to choose starvation rather than violate a deeply religious conviction. There are other ways of providing for the protein defect, and these non-flesh eating communities should receive particularly helpful guidance from the research services.

To find other sources of satisfactory non-flesh protein is a difficult and large problem, as large as the non-flesh eating communities themselves, representing many millions of people. But this makes the need so much more important and urgent.

There is another aspect of these two suggested diets which needs emphasis. The probable tendency will be to take less of vegetables, fruit, and milk than is called for by the outlines. This would be a very serious error, because these very foods are the real health-promoting factors of the suggested diets. It is from these that one obtains much of the needed vitamins and mineral salts. The quantities of these foods called for are really the minimum requirements; they may be increased to advantage, but decrease in quantity will invite deficiency conditions.

FOOD AS MEDICINE

H. C. MENKEL, M.D.

VEGETABLES

AFTER reviewing these details of cause and effect as related to food-borne diseases, one may better understand why it is that notwithstanding the many schools of medicine, the various systems of treating disease, and the thousands of drug preparations so widespread in India, there is so little corresponding healing. This is due, as has been explained, to basic food deficiencies. No system, or mode of treatment, eastern or western, can correct the results until the nutritional defects constituting the cause are corrected.

The real effective remedies are to be found in a large variety of natural foods. The more useful and essential of these food remedies, and their healing constituents, may be briefly indicated in the following pages.

Cabbage

Perhaps you have never thought of this humble vegetable as being a valuable medicine. Included in the cabbage family are Brussels sprouts, cauliflower, broccoli, kale, palm cabbage. The medicinal value of these vegetables is best obtained when they are eaten raw.

The remedial effect depends upon the vitamins A, B, and C; also upon the calcium, iron, potassium, sodium, and phosphorus content. The juice of cabbage, even the cooked juice, is valuable for strengthening the alkali reserves of the tissues. By this means acidosis may be effectively combated.

Spinach or Sag

In the green leafy plants, nature carries on her most elaborate vital alchemy. Green leaves are the very basis

of life. Without them life could not long be perpetuated. Milk, which is so highly praised, is but green leaves in solution. Through these greens of different kinds, nature compounds all the essentials of life.

Perhaps the best known and most extensively used green is the group of leafy plants called spinach, or "sag." The important medicinal value of these plant-foods will be understood from the following list of contained values: Calcium, sodium, chlorine, phosphorus, iron, vitamins A, B, C, and E, protein, and carbohydrate.

Spinach rates high for iron, vitamins, calcium, vegetable hæmoglobin, and for protein-building amino-acids.

In fact, it is to the green leafy stuff we must go to find the secret of growth, for in them is produced a substance that imparts to the young of animals the power to grow. For this reason, the juice from greens is advised for infants, and later the pulp put through a strainer.

Children should be encouraged, not forced, to like and desire green leafy foods. This is particularly true in India where growth and development is a problem so frequently met. For this developmental purpose, it is well to know that milk and green leafy foods, such as spinach, are interchangeable to a large extent, meaning that to promote growth and development, green leafy food is the most effective substitute where milk is scarce or cannot be afforded.

Very many green leafy vegetables suitable for food grow wild and may be had for the trouble and effort of gathering them. The leafy plants which we now know as spinach, or "sag," were at one time wild and unused, until someone, somewhere, experimented and made the discovery of their nutritional and medicinal value. There are still many more green plants in the wild waiting to be found.

The reason green leafy food plants are called "protective foods" is because they contain the mineral elements which are deficient in such staple foods as rice and other refined grains. Also in their composition the alkaline min-

erals largely predominate. This gives them a high value for maintaining a more effective resistance against infection.

Pulses are the only source of protein for very many in India, with often unhappy results for the reason that pulses are an incomplete source for the eighteen amino-acids necessary to build protein tissues for the human body. It is now known that this defect in pulses can be made up by the liberal addition of green leafy substances.

There is another important service rendered by greens in this connection. The proteins of pulses require for their complete digestion and assimilation, a certain amount of vitamins A and B. This necessary supply is readily obtainable from green leaves. For this reason, when pulse forms part of any meal, there should also be added a generous amount of green leafy foods like spinach to ensure these needed protein-digesting vitamins.

Small, young, tender sprouts of spinach can be used in raw salads, for they are then as appetizing as tender lettuce leaves.

Spinach belongs to the 5-per-cent vegetables so necessary in the diabetic, detoxicating, reducing diets.

Spinach should be cooked in so little water that when finished there is none left to throw away. If it is first washed thoroughly in several changes of water, the water which clings to the leaves is sufficient for cooking without adding more.

Carrots

The humble carrot has been honoured by science in true knightly fashion. Its name will ever, hereafter, be highly revered, for has it not been selected as the symbol—"carotene"—for the yellow pigment which nature employs for compounding the mystic and highly important vitamin A? This vitamin is very essential during youth to promote balanced growth and development. Its property in adult life is to maintain health.

Deficiency of vitamin A in the average Indian diet represents one of the major nutritional problems in this country. This fact was emphasized by the Central Govern-

ment's Health Commissioner in his recently published report.

Deficiency of carotene in the diet is manifest by stunted growth, chronic ill-health, low resistance to infection, particularly to such infections as produce eye, ear, sinus, and lung diseases. The effects of vitamin A deficiency are widely manifest in India.

How to correct this defect and its consequences is a practical problem to which the Nutritional Institute at Coonoor has given much attention. They recommended more extensive use of cod-liver oil and red palm-oil as an addition to the diet.

Neither of these two recommended substances are likely to find much use among the masses, because of the high cost and difficulty to obtain them readily. Milk is also a good source of vitamin A, but its liberal use is likewise restricted by the expense factor.

It is just here that the carrot may provide a helpful solution to these vitamin and economic problems. It compares well with cod-liver oil, red palm-oil, and milk as a ready source for carotene or vitamin A, as indicated by the following quantitative comparison:

Cod-liver oil	xxx
Butter	xxx
Whole milk	xxx
Carrots	xx
Coconut	x
Ground nuts	x
Wheat-bran	x

The daily use of carrots for children and adults, and its extensive cultivation, should be encouraged in every possible manner.

This vitamin A withstands ordinary cooking temperatures with little loss, but loses its power gradually on exposure to air and high heat. For this reason carrots should be cooked soon after being taken from the ground. The cooking is best done by the method which prevents exposure to the air while being cooked. Cooking carrots in



This is a good way to get your vitamin A.

"ghee," and in an open vessel, is most destructive to their vitamin-A content.

To drink raw carrot juice, in quantity of one or more large glasses daily, is an excellent and palatable way of obtaining the nutritional values of the carrot.

Still another valuable feature in the carrot is its anti-septic properties. Metchnikoff first called attention to this effect. He found that by feeding carrots to animals their stools become nearly free from harmful bacteria. These properties are now quite generally recognized at certain European spas where carrots are served in some form, or as juice, at each meal.

Onions and Garlic

Eating raw onions and garlic is considered taboo by society and business circles. One could wish that the alcohol and tobacco breath were considered equally as indecorous. The offensive breath produced by the onion family is due to an oil which, after eating, is excreted through the lungs and therefore gives the characteristic odour to the breath. The best way of overcoming this un-

pleasant effect is to bake the onion by burying it in hot ashes or, better still, to cover with sand in a baking dish and then bake in a hot oven. High temperature volatilizes the oil and so renders this vegetable less æsthetically objectionable.

Even the laws of Manu V. 19 have joined in voicing this prejudice, for there it is written, "A twice-born man who, knowingly, eats mushrooms, a village pig, garlic, a village cock, onions, or leeks will become an outcaste." This was another way of keeping society free of halitosis.

Regarding onions and garlic it has been said, "They build us up physically to a remarkable degree, notwithstanding that they may tear us down socially."

Among the favourable things to be said of the onion family is that they constitute a good source for valuable alkalinizing minerals. On the other side of the picture Dr. Robert Hutchinson tells us that onions and asparagus are the only two vegetables yielding uric acid. These vegetables should therefore be avoided by persons who have an excess of, or are sensitive to, uric acid.

Dr. S. S. Nehru discusses a new value contained in onions as observed in his rural uplift station at Mainpuri:

"Vitamins have come into their own, and the whole alphabet is represented by particular foods which are carefully impressed by the up-to-date dietitian on the popular attention. But there is another type, and a newer source of energy which can be captured with profit to the human system by dietetic devices. Their type is the so-called Gurwitch radiation, a form of ultra-violet rays which has such a powerful effect if administered in mild doses. Certain root crops are precisely rich in this form of radiation, such as onions, carrots, turnips, beetroots, etc. These are easily available in the rural area, and there is no reason whatever why the villager should not grow them on his own land and use them in his own menu. For the benefit of those who, more out of prejudice than experience, may be tempted to belittle or even deny the efficacy of this new type of organic rays, let it be noted that the rate of growth

of plants exposed to roots of onions, carrots, etc., has been found by the research members of the E. F. G. A. to be doubled solely in consequence of such exposure."

Proceedings of the First International Congress of Electro-Radiobiology, Venice 1934, p. 879, reads as follows:

"M-rays are present in and emitted by young onions. These, with 2-to-1-inch diameter, are most active and only up to 24 hours after removal from the earth. On the view that M-rays are ultra-violet in character but very mild in nature, the effect of such mild ultra-violet radiation on diseased tissue which is thereby activated is worthy of serious consideration."

Cucumbers

The cucumber is one of the vegetables really relished in the raw state by most people, especially in summer, as it has a cooling and refreshing effect. Nothing makes one's mouth water more readily than to see, as one so often does in Simla, a hill man coming along the Mall eating a big, juicy, fresh cucumber. Surely the trail must be wonderfully shortened for him, and made really enjoyable as he munches at his cucumber along the way. For more than two thousand years the cucumber has contributed to the gustatory pleasures of men in many lands, regardless of political or religious persuasion. Mrs. Wiser, in her book, "The Foods of a Hindu Village," writes: "In the hot weather, men, women, and children may be seen feasting on long green cucumbers. Roadside vendor stalls and religious fairs abound in cheap cucumbers, so that one cannot miss them, at home or abroad."

The cucumber, during its season, in addition to its use as a raw food, is also included in the daily cooked, spiced, mixed-vegetable dishes so universally used throughout India.

This vegetable has important values, as is evident from the following table showing mineral matter in 1,000 parts of water-free substance:

Acid Binding

Potassium	41.20
Sodium	10.00
Calcium	7.30
Magnesium	4.15
Iron	1.40
	<hr/>
	64.05

Acid Forming

Phosphorus	17.45
Sulphur	5.90
Silicon	7.00
Chlorine	5.60
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	35.95

The above mineral arrangement imparts to the cucumber definite remedial and curative qualities. We note at once the high potassium content, 41.20 per cent, constituting an important source for this natural, organic, colloidal form of potassium. The importance of this food mineral may be judged from the prominence nature has given to it in organizing the red blood cells.

Per thousand grammes of blood-cells, the inorganic salts contained are at this rate:

Iron phosphate	0.998
Potassium sulphate	0.132
Potassium chloride	3.079
Potassium phosphate	2.343
Sodium phosphate	0.633
Sodium chloride	0.344
Calcium phosphate	0.094
Magnesium phosphate	0.060

Another point worth remembering is that the acid-binding (alkali) minerals in the cucumber represent 64.05 as against the acid-forming 35.95 per cent, thus placing cu-

cumbers in the alkali-plus list of foods. The mineral arrangement also operates as one of the best natural diuretics, stimulating urinary secretion, and promoting a free flow of urine. For this purpose the expressed juice serves best. This same juice, when combined with the juices of carrots, beets, and celery, has very beneficial effects in rheumatic conditions.

When these juices are used to secure the above effects, all use of cereal starches and refined sugars must be rigidly excluded from the diet. Concentrated protein foods such as meats, fish, fowl, eggs, and pulses must also be kept within the limit of not more than four ounces of any one or all combined during the twenty-four hours.

The above restrictions should be observed until the desired results have been accomplished. The amount of sodium content will provide for the minerals going into solution and made available for tissue reconstruction, and to eliminate waste materials.

Basic to all this benefit is nature's organized medicine capsule, called a cucumber. The conclusion is to eat more cucumbers and less of some other things which are not so beneficial to health.

String Beans and Brussels Sprouts

Here are together two vegetables having remarkable common values. In calcium, phosphorus, iron, and the vitamins A, B, and C they constitute a rich source, containing xx and xxx of each. There are other green vegetables equally well fortified with these essentials, so we need not dwell further thereon except to re-emphasize green vegetables in general as the real source for suitable food minerals and protective vitamins.

Our prime objective is to establish an essential yet not well-recognized relationship between these two vegetables and the needs of the diabetic patient. The diabetic person requires a food source rich in alkaline minerals and vitamins but low in carbohydrates, for diabetes is a condition of sugar and acid poisoning. This necessary food arrange-

ment is provided for by string beans and Brussels sprouts, containing as they do only 3 per cent of carbohydrates, and being, as already mentioned, rich in the other essentials. But additionally important is the fact that they contain a quantity of natural insulin so valuable to the diabetic patient whose pancreas has lost some of the insulin-forming capacity.

The pancreas is a digestive organ having as one of its duties the task of providing a chemical substance (insulin) necessary for the processing of starch into a simple form of sugar and then into body energy. This reducing process has been lost in part, and therefore the diabetic person must look for substitutional insulin.

The first insulin to be manufactured was extracted from animal pancreas; then it was synthetically prepared. Now we are discovering a natural plant source as contained in string beans, Brussels sprouts, and some other green foods.

Besides eating these low carbohydrate foods, best results follow the liberal daily use of raw juices extracted from string beans and Brussels sprouts. The addition of carrot and lettuce juices is also helpful.

In preparing these raw juices, the vegetables must first be finely minced in a cutting and bruising machine, then placed by layers in clean cloths and the juice expressed by means of a press such as an oil press, or other means that allow for very heavy pressure to be exerted. It is only by such a process that these most valuable, healing, and body-cleansing juices can be best obtained.

The machinery used must be washed with boiling water, before and after the juice has been extracted.

Lettuce

For those who appreciate the natural delicate flavour of foods, lettuce is, and has been, a favourite from quite ancient times. Augustus Cæsar is reported as having been very fond of this plant, and attributes his recovery from a very serious illness to the use he made of lettuce as a food. In such high esteem did he hold this lowly plant

that he dedicated an altar to it and erected a statue in its honour.

It seems that this vegetable was first grown in England about the time of Queen Elizabeth. Since then it has gained in favour until today, both in England and America, there are very many persons who make a lettuce salad the main article of food for lunch. With this salad is associated either a protein or a carbohydrate food according to the plan of meals adopted. Lettuce goes well with either type of these foods.

Combining lettuce with eggs is traced back to the Romans. This provides a very wholesome and compatible combination. Other leafy or green vegetables may be added, but no form of carbohydrate should be included if eggs are to be the protein companion food with lettuce. Other proteins as milk, curds, cheese, or meats may replace eggs. Olive-oil dressing makes a good addition.

To construct a lettuce and carbohydrate meal, any form of carbohydrate as bread, rice, potatoes, or other root vegetables may be combined, but no form of protein should then be included with this meal. This is on the principle that proteins and carbohydrates do not associate well at the same meal, particularly in the case of persons with defective digestion.

Lettuce belongs to the 3-per-cent group of vegetables. This means that these foods contain 3 per cent or less of carbohydrate. For this reason lettuce is prominent among the foods prescribed for diabetes, and in treating obesity.

The nutritional and medicinal value of this leafy food lies in its good supply of vitamins A, B, E, and it is also a really excellent source of vitamin C. In addition it supplies calcium, phosphorus, iron, and a good form of vegetable hæmoglobin. Such green leafy stuff provides one of the best iron tonics for use in anæmia. The iron and hæmoglobin obtained in this way is appropriated by the body to a much greater degree than the inorganic iron tonic sold as drugs.

The mineral content is in the form of colloidal organic compounds, this being the form in which nature prepares

and most readily accepts her needed minerals for body building and health preservation.

Lettuce is a form of green leafy food, with a delicacy of flavour which makes it more readily acceptable than most raw foods. From this leafy plant one also derives that mystic vital factor so essential to life and health, which no chemist has yet been able to analyze or define. The people of India need to become much better acquainted with the value and uses of this really wonderful raw food.

The following is a good suggestion: Even where there is no garden, it is still possible to have lettuce by growing it in boxes and pots. There is no need to wait for it to mature into an adult fully grown plant. If eaten when young and tender, about two inches tall, it will be found most delicious. In this young form it serves much the same purpose as sprouted pulse seeds.

One occasionally meets someone who experiences difficulty after eating lettuce. This is probably due to not thoroughly masticating the leaves. Under these circumstances, the young tender sprouts are best, or the more mature leaves may be finely shredded with a sharp knife. To serve in this shredded form, or as sprouts, is perhaps the easiest way to train children to accept and learn to relish this food.

A little lemon or lime juice over the lettuce leaves helps to add interest and variety of flavour. Lemon should not be used if a form of carbohydrate is to be eaten with the lettuce.

The advertisements of cod-liver oil preparations and of ultra-violet lamps have been so insistent that we are apt to forget that green leafy vegetables contain a very high rickets-preventing quality. In this connection, it will be interesting to quote Professor H. S. Sherman: "The antiarchitic potency of cod-liver oil and of ultra-violet irradiation are so great that they have absorbed attention to perhaps a greater extent than is desirable; for the antiarchitic values of some common foods should not be ignored.

"The presence of important amounts of the antiarchitic vitamin in egg yolk, whole milk, butter-fat, and green vegetables has now been demonstrated in a sufficient number of cases so that we may regard it as fully established."

The foods mentioned by Sherman would combine well as a meal for child or adult.

Disinfection

Salads are avoided by many in India for fear of contracting some form of bowel infection through eating raw, contaminated vegetables. All raw foods should be regarded with suspicion, but this need not prohibit their use, as they can be rendered safe by disinfection.

Raw fruits and vegetables are not the only foods capable of carrying infection. It is well known that a very high percentage of fish, fowl, and meats are heavily infected, and even after being boiled or baked, are still capable of conveying tuberculosis, cancer, colon bacillus, trichina, and other diseases.

Salad vegetables should be washed in quite strong soap-suds, rinsed, and then immersed in a solution containing chloride of lime (quarter ounce dissolved in one gallon of water), and the vegetables left in this solution for five minutes, then thoroughly rinsed. Such treatment renders the fresh foods quite safe for use as raw salad.

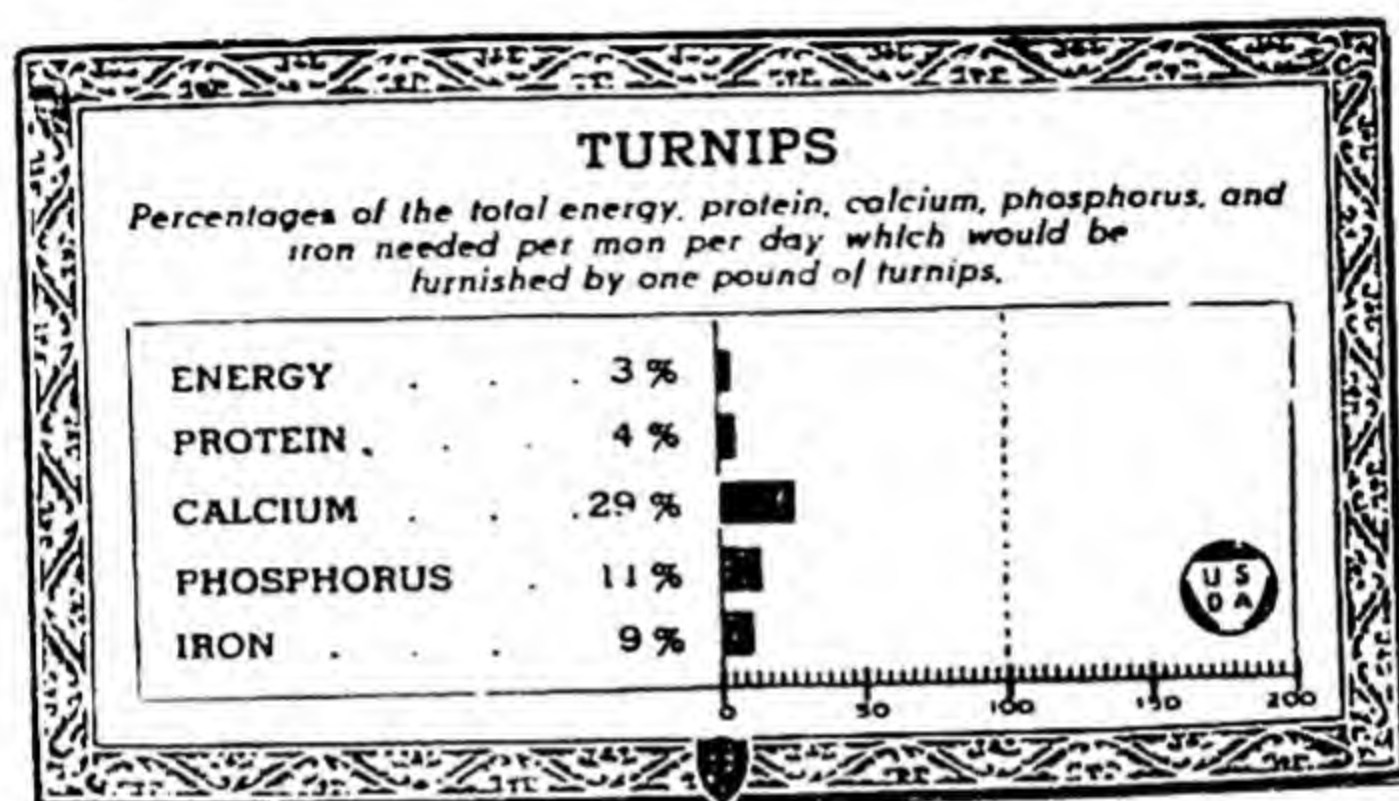
Turnips

The turnip represents another of the originally wild growing roots now cultivated, and occupying a place of esteem as a tuber food plant. There are several varieties of turnips, the most favoured being the swede.

Although containing no starch, it is nevertheless a carbohydrate food and very useful for diabetics. Many cooks and housewives make a great mistake by using only the root portion and discarding the green tops or leaves. Both root and leaves are necessary for obtaining the best nutritive results from any tuber vegetable. The root and leaves represent a combined structure, and must be so recognized when considered as a food. The leaves should

be prepared in the same way as spinach and eaten together with the roots.

One often hears the derisive allusion about not "squeezing blood out of a turnip," but one can squeeze some other things out of this vegetable which are of very great value to growing organisms, particularly from the



leafy portion. Among green vegetables these turnip leaves have the highest calcium content. The raw, freshly prepared juice from these leaves should be freely used by growing children and persons having defective calcium content in bones, teeth, and tissues. Additional mineral content are sodium, iron, and potassium. Therefore the liberal use of turnip-top juice is a very effective way of alkalizing the blood, particularly when combined with juices from carrots and celery.

When this juice is used for the purpose of hardening soft bones, it may be combined to advantage with lettuce juice to obtain the necessary magnesium. This combination is most effective for hardening the teeth.

Eat more turnips with their leaves.

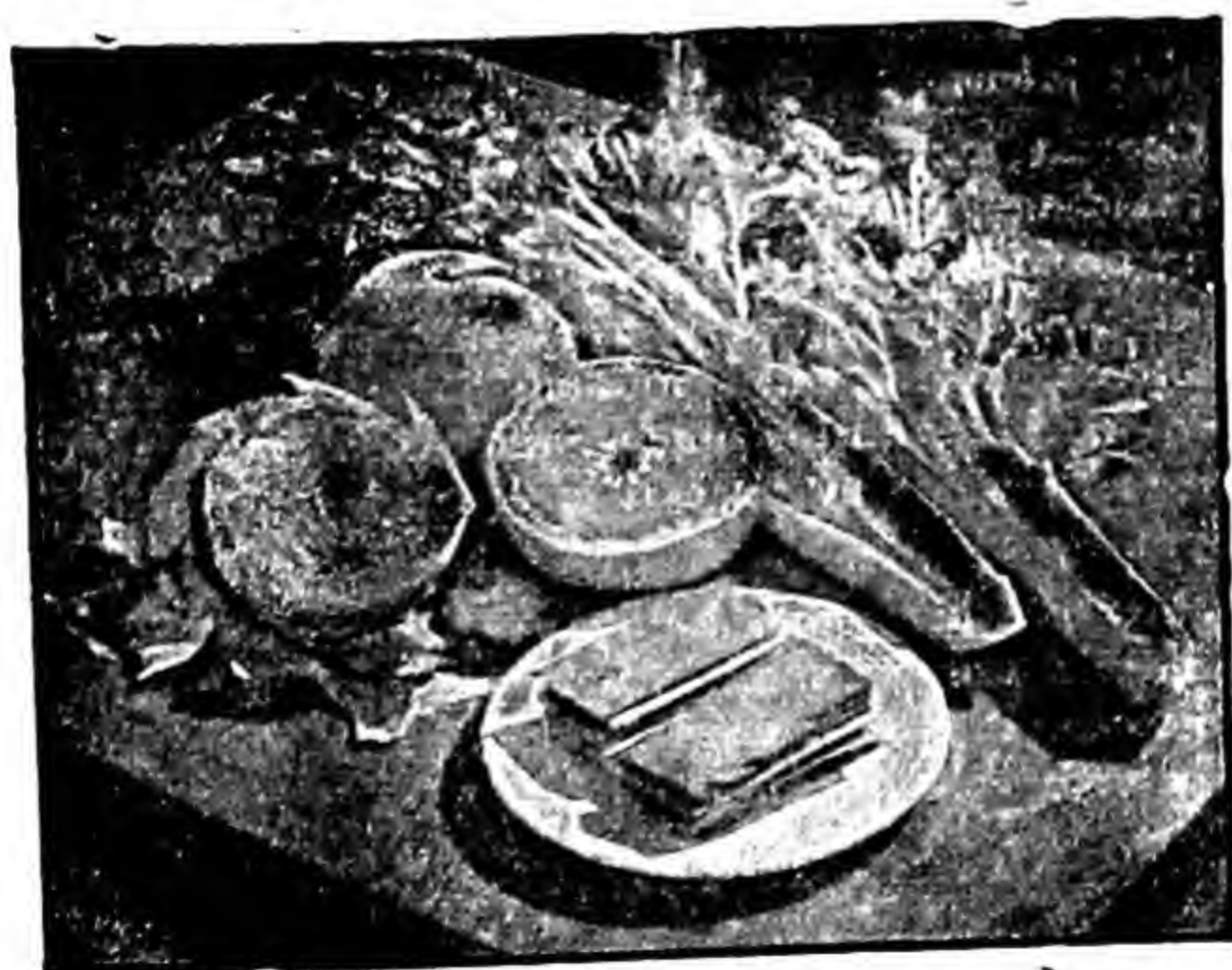
Celery

Celery is not so popular in India as in western lands, except among foreigners, who usually are delighted when-

ever it is possible to obtain a bunch of really good celery. This vegetable is mostly eaten raw. In this we may discover a valuable hint. The real nutritional, reconstructional, and remedial values of most green vegetables are best obtained when used in a raw, uncooked form. Celery lends itself very favourably to being eaten raw.

This vegetable has proven a useful aid in the treatment of arthritis, which is most probably due to its high organic sodium content as compared with calcium, the ratio being four to one. In arthritis an accumulation of inorganic calcium takes place in and about the affected joints.

The action of organic sodium is to keep lime and magnesia in solution, thus tending to prevent and relieve the arthritic joint deposits. To obtain this favourable action of celery, it is necessary to take it in a considerable quantity, much more than the usual few pieces taken as salad during an otherwise abundant meal. For this reason, when used as a remedial agent for arthritis, it should be taken in the



These are excellent foods as well as medicines.

form of freshly prepared juice. It is still better if the celery juice is mixed with raw carrot juice in equal parts. Two or three pints of this combined juice taken daily is advisable.

Arthritic patients undertaking this treatment must reduce all denatured cereal starches and refined sugars to an absolute minimum, as they are largely the source for the inorganic calcium deposits.

Parsley

Parsley is best known and mostly used as a good garnish for decorative purposes and for adding flavour to prepared food dishes. This homely, aromatic green has other unsuspected values. In particular, it possesses a medicinal and restorative quality, not generally recognized. Analysis reveals that among its constituent elements are iron, acid-binding (alkali) minerals, and vitamins.

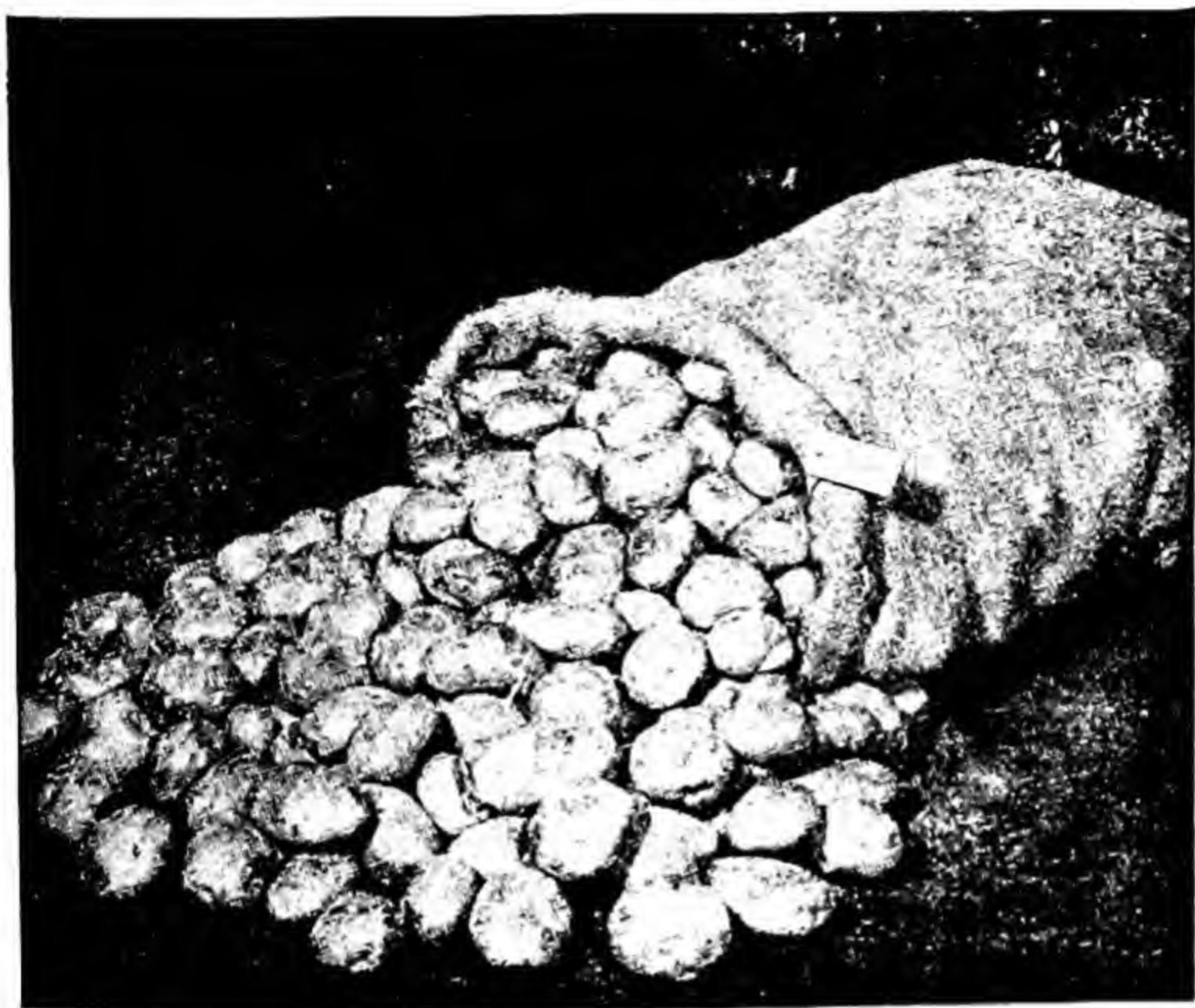
More recently attention has been given to parsley as a good source for natural organic potassium when used as part of a combination salad, or an ingredient of mixed vegetable juices.

Certain medical institutions in Europe and America are providing juice therapy regimes. Patients are placed for varying periods on vegetable and fruit juices only. In these institutions, parsley juice is used in combination with carrot, lettuce, celery, and spinach juices for treatment of kidney, bladder, and urinary-tract troubles. One authority mentions its value in corneal ulcer and other affections of the eyes.

Raw parsley juice, being very concentrated and potent, should not be used in a larger quantity than one or two ounces. It is best used freely diluted with other compatible vegetable juices.

Potatoes

The potato now occupies so important a place in the dietary of the world, that one wonders how the people of various nations planned their meals before the potato



was known and cultivated. It was not introduced into England until the time of Sir Walter Raleigh, who, like the famous tree in the garden of Eden, made both good and evil known to that country.

The potato as a really high-grade food item was demonstrated by the Danish food expert, Dr. Hindhede. His observations and conclusions were later confirmed by Dr. Rose of Columbia University.

These studies have shown that the potato must be ranked among the foods of first-grade importance. Although a vegetable, its protein content is considerable, and of high biological worth. It could actually satisfy the protein needs of the body if three pounds per day were eaten. This remarkable finding means very much for India where potatoes are among the more easily obtained articles of food.

With real advantage the potato could replace such

cereals as rice, for the reason that it provides forty times more alkaline elements, such as soda and potash, which are so valuable in combating acidosis. It lacks in lime, and therefore should be combined with green leafy vegetables. The usual combination of potatoes with meats is very bad and should be avoided.

Another useful discovery is its rich vitamin content of both the antiscorbutic and antineuritic vitamins. This suggests the usefulness of potato soup or porridge as a substitute for orange juice in the artificial feeding of infants, and also for children.

In India more use should be made of dehydrated potatoes during seasons when potatoes are difficult to obtain. In this form they may be kept quite effectively.

A word of caution may be in place regarding the possible toxic effect from using imperfectly matured potatoes and those which have sprouted, also those grown on the surface, having thus been exposed to the sun during their growth. All such potatoes contain an irritating and toxic substance known as solanin. There is a preference for small immature stock in some places, but the large mealy potatoes should be the choice variety.

Baking in an oven is the best method of preparation. When taken out of the oven, they should be squeezed to break the skin, so the enclosed steam may escape.

Boiling without removing the skins also conserves most of the protein and mineral elements, but it is important that just enough water be used as will suffice to cook them.

If potatoes are peeled in preparation, they should then be put into boiling water, not cold water, as this best preserves their food values. The water in which potatoes are boiled is valuable for making soups, as it contains both protein and minerals dissolved from the potato during the cooking process.

Soy Beans

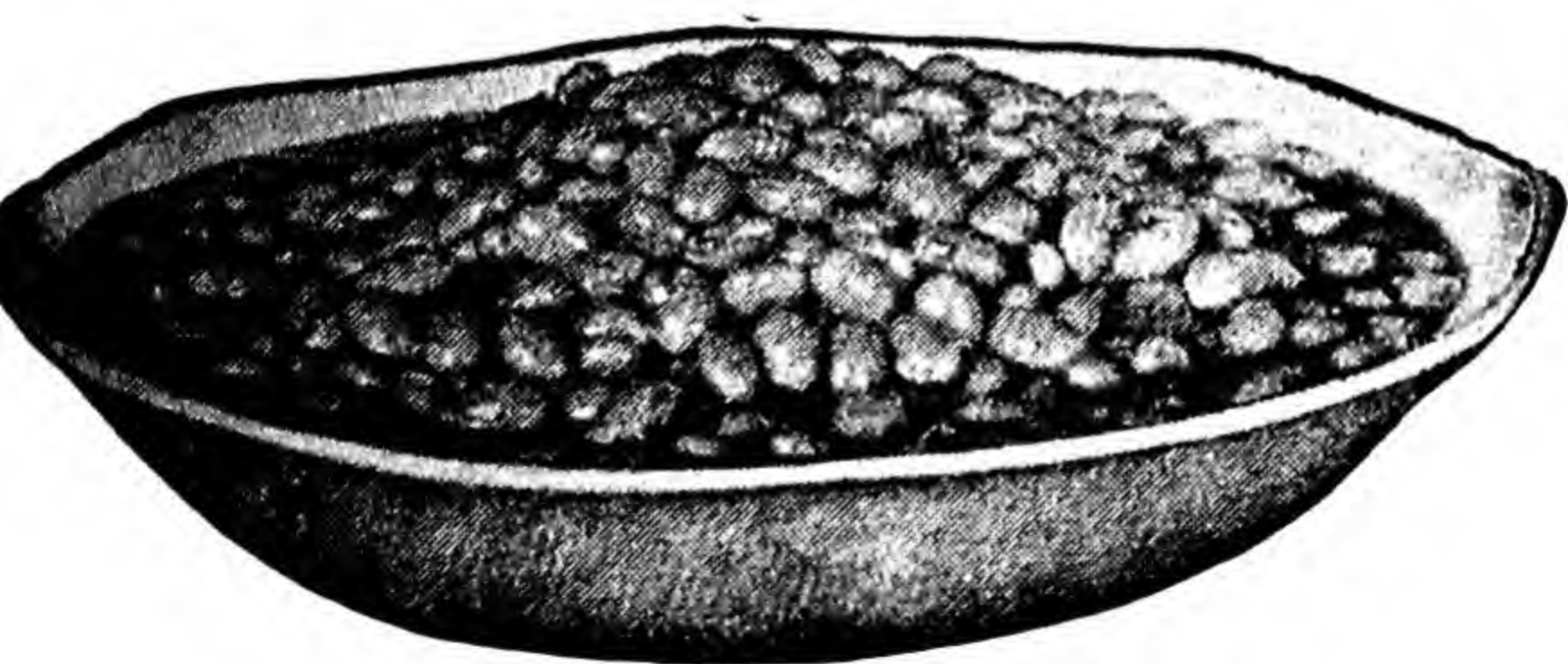
The soy bean cultivation dates back about four thousand years, at which time it was already cultivated in

China. As a source of protein food for the destitute multitudes of the Orient, this legume has served a large purpose. It contains 40 per cent protein, very little starch, 20 per cent fat, also lime, and vitamins A and B. The chemical reaction is alkaline, but like all highly concentrated proteins it contains a considerable quantity of purine bodies which, during the process of digestion, are converted into uric acid.

Although its use as a food for man has been advocated, it has not become very popular for at least two outstanding reasons. The taste is objectionable to many people unless decidedly doctored up in preparation. Thus far the most successful preparation has been done by well-equipped food industries, where the beans can be cooked free from air under high pressure.

The cooking of these beans at home still remains a difficult problem, as they require special methods. In China the most popular mode of preparation is to soak the beans in water, then bake. An improved method is to soak the beans for ten hours in a 10 per cent salt solution, boil slowly for half an hour, and then bake.

Another plan is to sprout the beans in the same manner as sprouting "dal," eating both beans and sprouts together.



Soy beans are a nourishing and wholesome food.

Effective cooking to render the beans soft is best accomplished by means of a steam cooker under pressure.

In soy beans we have a vegetable protein food corresponding to meat, fish, fowl, and eggs as animal proteins. Like all such foods, this vegetable protein must be used conservatively, not too frequently, nor too constantly. This is confirmed from observations on animal feeding conducted in the United States. The effect was identical as in feeding experiments with any other concentrated protein—high blood pressure, albumin and casts in the urine, together with kidney disintegration.

The maximum usable protein from any source, under normal conditions during twenty-four hours, is about four ounces. Less is considered better by some authorities, while more than this places the organism under strain, and congestion of organs is produced.

Milk made from soy beans is said to be becoming more popular in Japan. From this milk a preparation like cheese is made called "Toffu."

FRUITS

History does not record the circumstances that influenced man to forsake his earlier and more natural diet of fruits, herbs, cereals, and nuts, and become an omnivora, with emphasis on animal flesh. This change in food practice also brought with it results of physical deterioration and susceptibility to infectious diseases.

These deficiency consequences and their related causes are matters of more recent knowledge. As a result of this newer information we are now being urged by nutritional research workers and diet experts to reform our food habits and return to the earlier practices of our species.

We are taught that in arranging our daily bill of fare, certain elements must be included in every dietary. Those essential elements which are best supplied by fruits are the alkaline minerals, vitamins A and C, also citric, malic, and tartaric acids, and pectins. Each of these factors and the combinations of these being found in most fruits, constitute

them as remedies of the highest efficiency in quite a long list of diseases.

The detoxicating action of fruits, and their effectiveness in changing intestinal germs from the putrefactive to the more friendly fermentative varieties, represents an important value.

Fruit cures are coming into great favour in medical institutions and among practitioners in western countries. In these cures the patient is placed on an exclusive fruit diet for a period of several days. The particular fruits to be eaten are determined by the nature and requirements of the condition under treatment. Quite frequently it is possible to allow the patient to select whatever fruits he prefers with only several contra-indications.

One great advantage possessed by fruit and nut trees is their ability to draw upon minerals located at lower soil depths than can be reached by cereal and vegetable plants with short roots. The longer and stronger roots of fruit trees enable them to obtain their food minerals from deeply situated strata. Hence, fruit constitutes a more certain and richer source for food minerals.

The time has come when fruit should no longer be regarded as a mere accessory to a meal, but it must be recognized as being among man's best and most essential health foods.

Besides the scarcity of seasonable fruit in India, such as does grow is largely picked or knocked off before it ripens. Fruit which has not matured by the ripening process does not contain the valuable health, growth, and protection factors of fully ripened fruit. Co-operation of the village elders should be sought to secure rulings providing for the protection of fruit until it matures. A campaign is also needed to promote planting of more fruit trees and berry bushes. The mango, guava, and papaya, as well as berries, tomatoes, and other tropical fruits, thrive well in India. Certain sections are also favourable for the development of western varieties of fruit.

Fruitarianism

There are people in America whose diet consists of fruits, nuts, leafy vegetables, olive oil, honey, and occasional small amounts of prepared cereal food. The predominating diet is fruit, and the foods partaken of are chiefly uncooked. Animal foods and legumes are excluded.

Professor Jaffa of the University of California placed some such persons under observation to ascertain their daily food intake. This worked out on an average:

Protein	33 grammes	(1 1/5 ounces)
Fat	59 "	(2 ounces)
Carbohydrates	150 "	(7 1/3 ounces)

Total solid food, 11 ounces, 1,500 calories.

Professor Jaffa details particulars of a family with three growing children who had all maintained perfect health on such a diet for seven years. The explanation of these results is to be found in the rich supply of alkaline minerals provided by such a diet. These alkaline elements protect the protein tissue molecule against premature cleavage or disintegration. For this reason the actual protein intake requirement is very much lower than a person subsisting upon the ordinary high acid-ash-forming diet.

Dr. M. Hindhede of Denmark and Dr. C. Roese of Erfurt, Germany, have shown that on an alkaline diet such as indicated above, for example, it is possible to maintain health and endurance on less than two ounces of protein per day. To obtain such results the diet must provide all of the alkali minerals in abundance.

Almost yearly some new laboratory discovery regarding another food element is announced. Then follows a campaign of publicity advertising by manufacturers, urging the necessity of taking this newly discovered food factor in the form of tablets, syrups, etc. The truth regarding all these food medicines is that the only satisfactory way of obtaining everything the body requires is to eat simple, natural foods, of which green vegetables, fruits, nuts, and entire

grains are the most important in providing for protective nourishment from non-animal sources.

Tomatoes

So rapidly and extensively has the tomato been adopted into the food practices of most peoples that it



Picking a good crop of tomatoes.

vies with the potato for first place among vegetables. Its composition places it among fruits rather than vegetables. Like fruits it is rich in alkali minerals and vitamins A, B, and C.

The medicinal reputation of the tomato is largely the result of its known high antiscorbutic properties. This means that the use of tomatoes in sufficient quantity will both prevent and cure scurvy.

Scurvy is a disease condition resulting from deficiency of vitamin C in the diet. Among infants the symptoms are

pallor, retarded growth, no appetite, loss of weight, red swollen gums bleeding easily, a whimpering cry, and worried expression.

Among adults the symptoms are loss of energy, sallow complexion, bleeding gums, shortness of breath, pains in the legs, small red spots on the skin, which are little hæmorrhages.

The best remedy is tomato juice or the equivalent of whole tomato, 4 to 6 ounces daily.

For infants receiving mother's milk, this vitamin factor may be supplied by giving them, after the first month, strained tomato juice, preferably uncooked. Beginning with 2 teaspoonfuls daily the quantity should be gradually increased, until by three months of age the baby is receiving 5 to 6 teaspoonfuls daily. A slight fever may result after first administering this tomato juice, but this need not cause uneasiness, as it is frequently observed, and soon adjusts itself.

In addition to its scurvy-curing powers, this fruit has other remedial values due to rich content of potassium, sodium, calcium, and iron, also to additional vitamins A and B. Citric and malic acids amount to about 0.5 per cent, while oxalic acid content is only 0.5 parts in 10,000.

Lemons

This fruit is esteemed chiefly for its juice, which has many uses and values. Lemon (or lime) juice contains 7.5 per cent of citric acid, and 2 to 3 per cent potash and phosphorus. Over a long period of years the lemon was recognized for its marvellous value as a cure and preventive of that group of disturbances represented by the term scurvy. The particular scurvy-preventing property has now been identified and named vitamin C. This vitamin is a minute acid factor to which the name of ascorbic acid is given.

The potassium of the lemon is another factor whose value ranks very high, rivalling equally that of vitamin C for health-protecting powers. Potassium is an alkali mineral



S. V. Gopal Rao

An ideal summer drink.

and gives the lemon an important place as a ready source for alkali salts to build a reserve within the body tissues. Its effective use in treating rheumatism and other conditions of acid auto-intoxication is being recognized.

Phosphorus is necessary for maintaining growth and development of new tissues. It also promotes an active oxidation process within the body tissues.

The citric acid of the lemon is a very powerful disinfectant, but is not dangerous to use. It approaches nearest to the ideal disinfectant, being active against germs but harmless to body tissues. For this reason lemon juice, either full strength or diluted, as required, may be freely used for both internal and external purposes.

This assembly of useful elements and their combined health-giving and healing properties give to the lemon a right to a prominent place in India's national dietary.

From America come reports of the effective use of

lemon juice in various combinations with other fruits for the treatment of cataract, athlete's foot, pyorrhœa, halitosis, eczema, and, not the least, acid stomach.

The effective combination of healing properties as contained in lemon juice provides a very effective and simple home remedy. More study and wider use of the lemon should be given for meeting India's manifold disease problems. Some day when its uses are better understood, it may be found that in the lemon nature has provided a natural remedial agent of wide application, with high remedial and protective efficiency and, withal, easily and cheaply obtained.

Dates

The nutritive value of dates in terms of calories is very high—98.4 of energy-producing power per ounce. The source of this potential energy value is contained in the simple sugar—glucose—of which the date has about 70 per cent. This dextrose or date sugar differs from the ordinary table (cane or beet) sugar in being compatible to all body tissues and needs, being the natural fuel of the body. This form of sugar has already been pre-digested in the process of ripening, and is therefore ready for immediate absorption and utilization for energy purposes.

A further important fact is that date sugar is organically combined with other essential nutritive elements, as lime, iron, protein, and vitamins. Weight for weight, dates contain more food iron than meat. This arrangement of combining several food essentials into a balanced compound is nature's way of providing the correct nutrition for promoting health.

In contrast, cane sugar is a denaturalized, concentrated sweet, producing an acid-like irritation on the digestive and eliminative organs. For this reason the free and constant use of cane sugar is a frequent cause of gastric catarrh and stomach acidity. It is also believed to be a contributing cause of diabetes.

From these considerations it seems obvious that the

date is a wholesome and valuable food, and a good substitute for cane sugar as a source of body energy.

One advantage of the date will especially please children; it may be used as freely as desired without damage.

Metchnikoff was first to advocate the use of dates for altering the nature of intestinal germ culture. By this means, the poisonous putrefactive germ producers of auto-intoxication may be suppressed, and the acidophilus type of bacteria encouraged. Putrefactive bacteria cannot thrive in food media where the date predominates, whereas the friendly form of intestinal bacteria is encouraged by a liberal date-containing diet.

For those suffering from constipation a liberal use of dates is advisable. Before using, dates should be thoroughly washed, as they are usually very dirty even though they do not look so. To remove the tough outer skin, place the dates for a few moments in very hot water. This loosens the skin so it may be easily stripped off. Eat more dates.

ANIMAL PRODUCTS

H. C. MENKEL, M.D.

MILK

✓ WE all make our start into life on milk. It is the infant's one perfect food, and for the developing child, milk provides the essential growth factors. Nature planned milk as a well-balanced diet to provide all the primary nutritional essentials—mother's milk for the infant, and for later periods, cow's milk with certain modifications. Experience and observation has taught mankind the world over the peculiar value of milk.

His Excellency Lord Linlithgow, in a speech at Simla, made the following observation regarding milk: "It is a scientific fact beyond dispute that a liberal supply of milk is an essential constituent of diet for growing children, nor can there be the slightest doubt but that good nourishment in the early years of life is essential to the building up of a strong constitution in after life. Let me give you quite shortly the results of a very carefully conducted experiment carried out in my own country. This experiment showed that the addition of a pint of milk to the ordinary daily diet of growing boys, converted an average annual gain in weight of 3.85 pounds per boy to one of no less than 6.98 pounds, and increased the average gain in height of 1.84 inches to one of 2.63 inches."

The diet of India being so largely of a meatless nature, the providing of satisfactory protein in quality and quantity is a matter of real urgency. In this emergency there is to be found no general source for non-flesh protein so satisfactory as good cow's milk. Actual experience has shown that milk protein is superior to meat protein.



Maneck J. Vyarawalla
Iced buttermilk keeps the system cool.

In view of this highly important finding, it becomes evident that in India dairy interests rather than the "abattoir" should receive encouragement. McCollum, writing in connection with diet in America, makes the following observations: "We could entirely dispense with meats without suffering any ill effects whatever, but if we permit the use of milk, even in the diet of adults, to fall much below the present consumption, its effects will soon become apparent in our national efficiency." The average annual consumption of milk in America is 55.3 gallons per head. Compare this with India where the annual average is only 6.5 gallons, or less than three ounces daily per head. It has actually been seen on the diet sheet of an orphanage in one of India's large commercial centres, that the growing and developing children are provided with only three table-spoons of milk each during the day. What a lifelong tragedy this entails! If America's health and vigour would be affected by reducing the milk allowance below a possible one quart, or two pounds daily, what must be the handicap for India's population with an average daily allowance per head of less than three ounces, and of its orphans with only a daily allowance of three tablespoonfuls each of this indispensable fluid of life!

Sir Robert McCarrison wrote as follows: "If the food contains enough milk products, then it is not necessary to eat flesh meat at all; 'enough' milk is not less than one pint, and a quart if possible; but few children in India consume anything like this amount.

"The greatest nutritional need of India at the present time is the production of more and of purer milk, for there is no more important food-stuff than this, and none on which the public health is more dependent. . . . The rising generation must realize the importance of pure milk to the wellbeing of the people, and see to it that India shall become as enlightened in regard to milk production and to milk distribution as other countries."

There is nothing really new or recent about all this except perhaps the modern effort not only to popularize

milk, but also to make it available by means of effective and scientific production and distribution.

Long ago it was written in the "Sushruta": "Hence it proves congenial to all sentient animals. And since milk is kindred in its nature to the essential principles of life and so very congenial to the panzoism of all created animals, its use may be unreservedly recommended to all and is not forbidden in diseases due to the deranged action of Vayu or Pittam, or in ailments affecting the mind or the vascular system of man. Its beneficial and curative efficacy may be witnessed in cases of chronic fever, in cough, dyspepsia, phthisis, and other wasting diseases."

The scientists of more recent times understand better in detail than did the ancients why milk is so beneficial as food and as medicine.

It must always be remembered that all this high value of milk applies to clean, fresh milk as obtained direct from the well-fed and healthy cow. Along with the need of more milk, is the corresponding necessity to understand and desire to care for the cow in a rational manner.

Boiling and pasteurizing do alter the original composition of milk somewhat, but since it is highly necessary to sterilize all milk in India, one must enlarge the diet by a liberal addition of raw fruit and raw green leafy vegetables to compensate for any nutritional loss sustained from sterilizing or boiling the milk.

Several very good dried, powdered, or desiccated milk preparations are obtainable. The milk so treated being from well-fed American, Canadian, or Australian cows is of excellent quality. When the required amount of water has been added, it represents a high grade whole milk suitable for all purposes.

Ordinary table sugar should not be added to milk, as this is very apt to produce fermentation and flatulence. Honey is better than sugar if additional sweetness is desired.

Milk should be taken in small sips, and chewed so as to mix with saliva. This prevents the formation of large hard curds in the stomach.

Perhaps the greatest value of milk for adults is in its supplementary use, as a means of rounding out the biological value of other foods, particularly of a vegetarian regime. The type of vegetarian dietary so largely followed in India is incomplete. This can be rendered efficient in most instances by the liberal addition of milk and milk products, as curd, or cheese, to the daily diet.

Goat's Milk

The goat, like some higher orders of life, has a two-sided nature, good and evil. The bad side was emphasized by Carl Vogt who insisted that the legend is justified which claimed the devil to have created the goat. He wrote: "It is the most destructive creature in the world in forests, and the old seats of civilization—the countries around the Mediterranean—owe the destruction of their forests, the nakedness of their mountains, and the inevitable consequences of that condition, the dryness of their climate, to the devastations of these animals."

This fact will have been noted by everyone who travels along the motor roads of India. What the goats themselves cannot reach, their herders tear down for them. In this way many useful shade trees are destroyed.

It was left for Mahatma Gandhi to stress a better and more useful side of this animal. Goat's milk certainly has been associated in the popular mind with Mr. Gandhi, just as the umbrella is with Mr. Chamberlain.

Goat's milk is nutritive and is claimed to be easier of digestion by persons whose nutritional efficiency is lowered. This will apply only to certain persons, but not as a universal rule. Butter and cheese may be made from this milk as from cow's milk.

There is need to stress the importance of sterilizing goat's milk before using for the reason that it is capable of transmitting disease infection the same as cow's milk. Undulant fever has been traced to goat's milk, as also to cow's milk, and to hog's flesh when used as food. Fortunately, pasteurizing or boiling the milk will protect against this form of infection.

The goat has been termed "the poor man's cow," and as such it certainly serves a most useful purpose in India. The first cost is within reach of many who are thus provided with a source of one of the very necessary health factors. The following analysis shows how milk from the goat compares with cow's milk:

	Water	Solids	Fat	Casein	Total Protein	Sugar	Ash	Calories per oz.
Cow	87.80	12.20	3.40	2.70	3.40	4.70	0.7	18
Goat	86.30	13.70	4.0	3.60	4.60	4.30	0.8	20

Eggs

The very extensive use of eggs as an important part of the human bill of fare is due to two factors. First is the ease with which they may be obtained and prepared. Railway travellers in the Punjab must have noted with interest at almost every station platform, vendors of hard-boiled eggs ready to serve. With almost equal ease this food-article can be obtained in any part of the world—raw, boiled, poached, fried, or in omelet form. Even among people of a foreign tongue, just to make a noise like a hen and to shape the finger like an egg, is a language understood everywhere, and almost invariably produces the desired article.

The second influence tending to popularize eggs is the general impression of their high nutritive value and ease of digestion. Actual nutritional observations indicate a necessity to somewhat revise these former concepts.

The yolk, or yellow part, constitutes the real nutritional value of the egg, containing as it does the several elements suitable for nutrition, including lime, iron, and the vitamins A, B, B₂, and D. All of this is conditional and determined by the nature of the food material obtained by the hen, also the ultra-violet rays absorbed by her from the sun. This indicates that an egg is not necessarily an egg by appearing like an egg. There are impoverished eggs, just as there are impoverished animals and impoverished children, because of inadequate ration.

One concept needing to be revised concerns the white portion of the egg. Several investigators have shown that raw white of egg, contrary to popular opinion, is not acted

upon by the digestive fluids, and, therefore, not digested. It is evacuated from the body unaltered, just as it entered. Still further, it actually hinders the digestion of other foods. This means that raw white of egg is not suitable as food, and above all unsuited for invalids and children. Light cooking renders the white more digestible. The yolk of the egg, on the other hand, is found to be easily digested when eaten either raw or cooked.

The egg solid consists of 12.5 per cent protein, 12 per cent fat, and 1.1 per cent mineral matter. Having an excess of nitrogen, fat, and phosphoric acid, they are acid-ash forming, and therefore listed among the foods which have an acid end-effect. For this reason eggs should be eaten with green vegetables and other alkali-ash-forming foods. The popular combination of eggs on toast, eggs with bacon, or ham, also eggs with rice, is a nutritional mistake.

Another fact not sufficiently understood is that a goodly number of persons are egg sensitive, and become egg sick whenever they eat food containing eggs, but they are apt to be unaware that it is eggs which produce headaches, nausea, fatigue, asthma, hay fever, cold in the head, bronchitis, skin eruptions, colitis, and diarrhoea, from which they suffer. This condition of susceptibility to certain specific foods is called food allergy.

For the benefit of individuals preferring not to include eggs in their bill of fare, it can be stated that all the food elements contained in the egg may be obtained from a diet containing an adequate quantity of milk and milk products (as butter and curd), vegetables, fresh fruits, and entire cereals. By comparing the lime (calcium) and iron content of eggs with that of other foods, the following will be interesting and significant for such Hindu friends as refrain from eating eggs or fresh meats. An ordinary serving of spinach ("sag") provides as much food iron as three or four egg yolks. Half a pint of milk contains lime equivalent to more than ten yolks of eggs. An ounce of turnip tops supplies the lime content of four egg yolks, while an ounce of mustard greens equals the lime contained in six yolks.

BALANCING THE NON-FLESH, OR VEGETARIAN, DIET

Considering a basic plan for those diets in India from which flesh meats are excluded, we can do no better than refer to the following statement by Sir Robert McCarrison:

"A diet consisting of any 'staple' grain with milk, milk products, and green leafy vegetables, contains not only the right kind and amount of proteins, but everything else the body needs for health, strength, and wellbeing."—"Food," p. 21.

"Fruit and berries serve some of the same purposes as green leafy vegetables. They are among the best of all foodstuffs, and should form a considerable part of our daily diet. They contain much mineral salts of the alkaline kind, which keep the blood pure and prevent its becoming acid or sour; fruits are most useful in keeping the bowels healthy and active."—"Food," p. 88.

According to this great nutritional authority and also information gained from other research centres in India, the non-flesh-eating communities may with confidence plan a fully satisfactory diet somewhat as follows, the foods being listed in the order of their relative biological importance:

Balanced Diet for a Vegetarian

8 to 10	ounces	milk
4 to 8	"	green leafy vegetables
4 to 6	"	non-leafy or root vegetables
	4	" curds, cheese, or 2 eggs
2 to 4	"	fresh seasonable fruit
6 to 8	"	home-milled wheat, rice, or millet
	2	" of either butter, cream, ghee, or oil
2 to 3	"	dal



Maneck J. Vyarawalla

Bananas are a good source of vitamins.

The staple foods on which the various diets of India are usually based are wheat, rice, and millet.

All grain or cereal foods are rich in starch or heat-giving properties, but as they do not contain a sufficient amount of other essential food elements, these must, of necessity, be supplied by foods in determined quantities, containing these elements. Otherwise the normal body structure and state of health may not be attained or maintained.

The determined means of correcting such diet deficiencies is the liberal use, in amounts previously indicated, of horticultural and dairy products (such as milk, milk curds, butter, or ghee), fresh fruits, and substituting wheat for an equal part of the rice or millet.

VITAMINS

By a careful study of the following outlines and tables one may discover the best way of correcting vitamin deficiencies.

Vitamin A

This vitamin is very essential to the child. It maintains normal development and resistance to infections in children and adults.

Deficiency of this vitamin in the diet results in eye trouble, retarded growth, loss of weight, lack of interest, susceptibility to infections, and respiratory diseases.

Food Sources of Vitamin A: Whole milk, butter, cream, cheese, cod-liver oil, fresh green vegetables, tomatoes, carrots, sweet potatoes, green peas, mango, ripe papaya, dates (Persian), jack fruit, orange, Bengal gram, soy beans, coriander.

Vitamin B

This vitamin is necessary for the maintenance of life and health at all ages. Deficiency results in loss of appetite, retarded growth, serious digestive and nutritional disorders, diarrhoea and mucous colitis, constipation, beriberi, neuritis.

Food Sources of Vitamin B: All green vegetable tissues, tomatoes, root vegetables, some fruits, ground nuts,

some whole cereals, yeast, human food gram, soy beans, radish, beetroot, cauliflower, skim milk powder, sweet potato, internal organs of animals, but not of fowls.

Vitamin C

Deficiency of this vitamin produces pyorrhœa, decay of teeth, ulcerations of stomach and bowels, poor digestion, under-nourishment, bleeding from mucous membranes, reddish skin eruptions.

Food Sources of Vitamin C: Lemons, oranges, pine-apples, pomelo, guava, papaya, tomatoes, coriander, cabbage, drumstick, lettuce, spinach, parsley, amaranth, green beans, green peas, cauliflower, turnips, sweet potato, sprouted seeds, bitter gourd, green chillies, internal organs of animals fed on green foods.

Vitamin D

Vitamin D prevents and cures rickets and other forms of mineral malnutrition.

Deficiency in a child's diet results in deformity and bone disease with anæmia and under-nourishment.

With adults the symptoms are those of acid auto-intoxication frequently terminating in rheumatism, neuritis, diabetes, and Bright's disease.

Sources of Vitamin D: Ultra-violet spectral rays. Vitamin D is absorbed by the blood when the skin is exposed to the sun and rays from a quartz mercury vapour generator. Also foods exposed to such rays absorb and retain vitamin D. It is also found in some specimens of cod-liver oil, egg yolk, and milk, but not always. The only reliable source is spectral rays.

Vitamin E

Vitamin E prevents and relieves sterility in both sexes.

Food Sources of Vitamin E:—Lettuce, meat, whole wheat, wheat germ, rolled oats, large quantities of milk, dried alfalfa grass.

FOOD PRODUCTS AS SOURCES OF VITAMINS A, B AND C, ACCORDING TO SHERMAN

<i>Food</i>	<i>Vitamin A</i>	<i>Vitamin B</i>	<i>Vitamin C</i>
Almonds	.... x	xx?	•
Artichoke	....	x	
Apples, raw	.... x	x	xx
Asparagus	.... *	xxx	•
Bananas, raw	.... x?	x	xx
Barley, whole	.... x	xx	•
Beans, navy	.... x	xxx	•
Beans, soy	.... x	xxx	•
Beans, sprouted	.... x	xx?	xx
Beans, string, fresh, raw	.... xx	xx	xx
Beans, string, cooked	.... xx	xx	•
Beetroot	.... *	x	•
Beet leaves	.... xx	x	•
Beet stems	.... *	x	•
Bread, white	.... ?	x	•
Bread, whole wheat	.... x	xx	?
Butter	.... xxx	—	—
Buttermilk	.... x	xx	x variable
Cabbage, green, raw	.... xx	xx	xxx
Cabbage, head, cooked	.... x	xx	x
Carrots, fresh, raw	.... xx	xx	xx
Carrots, cooked	.... xx	x	x
Cauliflower	.... x	xx	x
Celery, bleached stem	.... to x	xx	•
Celery, bleached leaves	.... x	xx	•
Celery, green leaves	.... xx	xx	•
Cheese, full milk	.... xx	•	•
Chestnut	.... •	x	•
Coconut	.... x	xx	—
Coconut oil	....	—	—
Cod-liver oil	.... xxx	—	—
Corn (maize) white	.... to x	xx	—
Corn (maize) yellow	.... x	xx	—
Corn oil ?	—	—
Cottonseed oil ?	—	—
Cream	.... xxx	xx	x variable
Cress	.... •	•	x
Cucumber	.... •	x	xx?
Eggs	.... xxx	x	x?
Egg white —	•	•
Egg yolk	.... xxx	x	•
Eggplant (brinjal)	.... •	xx	•
Endive	.... x	•	x
Fish, fat	.... x	x	•
Fish, lean	.... — to x	x	•
Flour, white	.... —	x	—
Flour, whole wheat	.... x	xx	—
Glucose —	—	—
Grapes	.... •	x	x

Food	Vitamin A	Vitamin B	Vitamin C
Grape juice	----	*	x
Grape fruit	----	*	xx?
Honey	----	-	-
Legumes, sprouted	----	*	xx?
Lemon juice	----	xx?	xx
Lentils (<i>dal</i>), dry	----	?	xxx
Lettuce	----	*	-
Limes	----	xx	xxx
Mango	----	*	x
Meat (muscle)	----	to x	x
Milk (whole)	----	•	- to x
Milk, "scalded"	----	xxx	x variable
Milk, condensed	----	xx	x "
Milk, dried, whole	----	xx	x "
Milk, dried, skim	----	xx	x "
Mutton	----	x	?
Oatmeal	----	- to x	-
Olive oil	----	?	-
Onions, raw	----	- to x	xx
Onions, cooked	----	- to x	x
Orange juice	----	x to xx	xxx
Orange peel	----	x	xx
Palm oil	----	x	-
Parsley	----	*	xx
Parsnips	----	-?	*
Peaches, raw	----	•	xx
Peanuts	----	x	*
Peanut oil	----	-	-
Pears	----	•	*
Peas, young green	----	x	xx?
Peas, dry	----	xx	?
Peas, sprouted	----	xx?	xx
Pine nuts	----	x	*
Pineapple, fresh raw	----	xx	xxx
Potatoes, sweet	----	x	*
Potatoes, white, raw	----	xx	xx
Potatoes, white, boiled	----	x	xx
15 minutes	----	xx	x
Potatoes, white, baked	----	xx	-
Prunes	----	x	*
Radish	----	*	-
Raisins	----	?	-
Rhubarb	----	•	x
Rice ("polished"), white	----	-	-
Rice, whole grain	----	x	-
Rutabaga	----	-?	xxx?
Rye, whole	----	x	-
Spinach, raw	----	xxx	xxx
Spinach, dried	----	xx	*
Starch	----	-	-
Sugar	----	-	*
Tamarind, dried	----	*	x

<i>Food</i>	<i>Vitamin A</i>	<i>Vitamin B</i>	<i>Vitamin C</i>
Tomato, raw	.... XX	XXX	XXX
Tomato, cooked	.... XX	XXX	XXX
Tomato, tinned	.... XX	XXX	XXX
Turnip	.... - to x	XX	*
Veal	.... *	XX	*
Walnuts	.... *	XXXX?	*
Wheat, bran	.... XX	XXX	-
Wheat, embryo	.... XX	XX	-
Wheat, whole	.... XX	XXX	-
Yeast	.... -	XXX	-
Yeast extract -		-

x indicates that the food contains the vitamin.

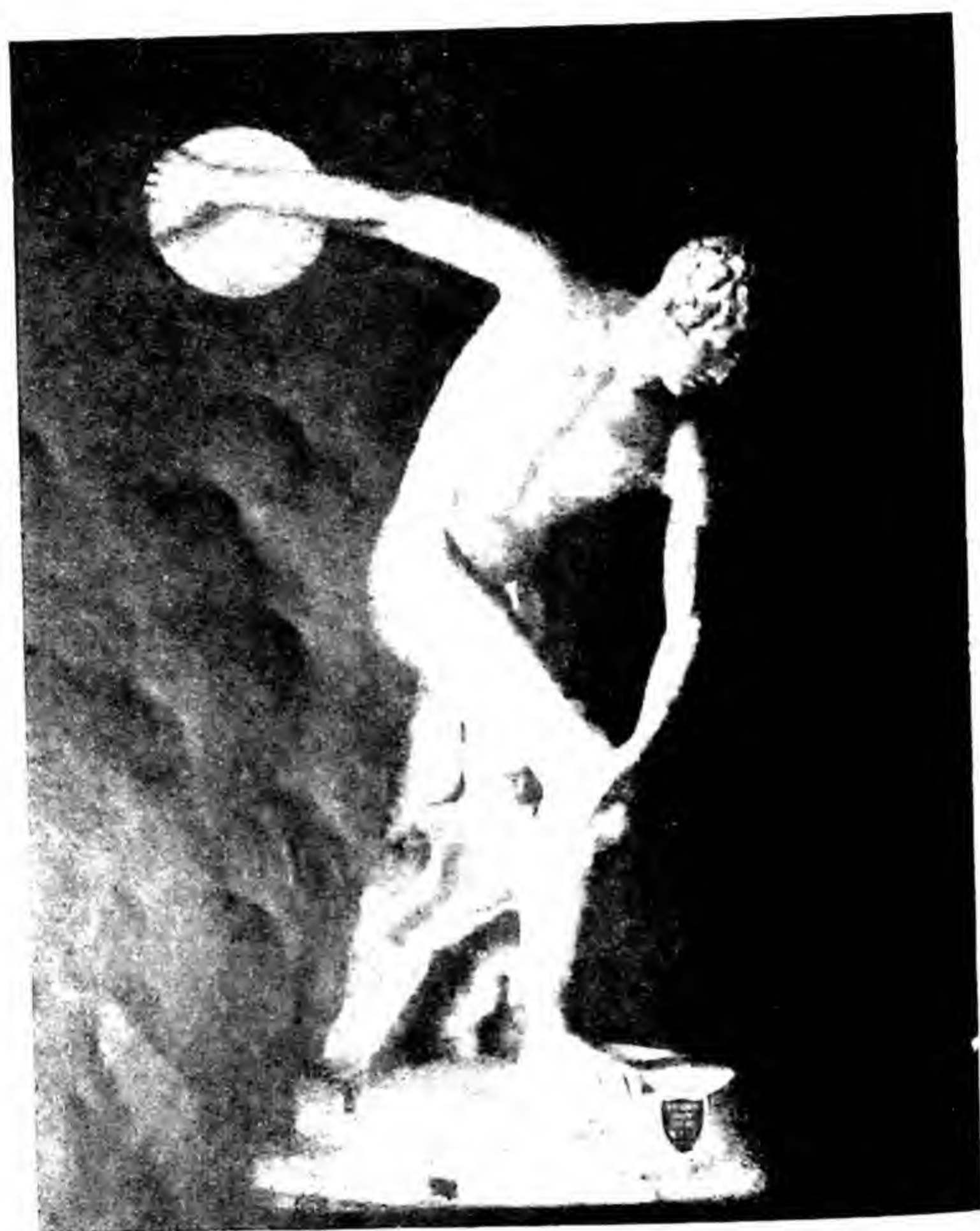
xx indicates that the food is a good source of the vitamin.

xxx indicates that the food is an excellent source of the vitamin.

- indicates that the food contains no appreciable amount of the vitamin.

? indicates doubt as to presence or relative amount.

* indicates that evidence is lacking or appears insufficient.



A perfect physique is a real asset.

MAINTAINING PHYSICAL FITNESS

L. E. EUBANKS AND CECIL PASCO

HOW TO GIVE YOURSELF A PHYSICAL CHECK-UP

MOST men consider themselves good judges of physical development and strength. In reality the average man knows very little about the subject. He can tell whether a man is tall or short, fat or lean, florid or pale, and that is about the limit of his ability. Without scientific knowledge, his only standard of measurement is his own physique. All strength less than his own is weakness, all that is greater is very great.

The art of physical examination is no simple thing. Many doctors are as ignorant as laymen along this line, and even among physical instructors the marks of real health and strength are not always well known.

Height and Proportions

We shall begin with height. It is obvious that this is important. If a man is too short he cannot carry enough weight to be powerful without at the same time being too bulky for beauty. If he is over-tall he is susceptible to organic weakness, particularly of the heart. In tests of muscle he is handicapped by poor leverage. The best height for strength is between 5 ft. 8 in. and 5 ft. 10 ins. Of course, a figure may be well proportioned at any height. The sitting height if large in comparison to standing height, is a sign of constitutional strength. As a guide, the average sitting height for a total height of 5 ft. 8 ins. is between thirty-five and thirty-six inches.

The size and shape of the neck is significant. A large neck, rather short than long, broad and firm at the base, accompanied by large nostrils and good lung capacity, is evidence of natural vitality. Another sign of constitutional vigour is well-developed spinal muscles; an erect, well-formed back is a splendid indication.

The shoulders should be broad and sloping. This slope is, of course, muscular. Bone slope may indicate a cramped thorax.

Chest, Waist, and Hips

In examining the chest, too much stress must not be laid on heavy external muscles. They are desirable, yes; but more important is the internal size. Test the subject with a spirometer, and require him to "blow" two cubic inches on it for each pound of his stripped weight—if his weight is normal for his height. The breathing should be deep, and free from any obstruction at all times. In a state of repose it should be rather slow. Mouth-breathing is a big point against physique; the only time it is allowable is during exertion.

The waist should not be too small as compared with the chest. A difference of six or seven inches in small men, and nine or ten for the tall fellows is about right. The abdominal muscles should be well developed and under sufficient control for the subject to contract them at will.

Arm and Leg Development

In considering the arms remember that, other things equal, short limbs are stronger than long ones, because of their better leverage. Of course no freakish abnormality is desirable. Biceps and triceps should be harmoniously developed, and credit should be given for equality of the arms; the cultivation of ambidexterity should be encouraged.

Forearm development should be duly considered. Some physical instructors seem to overlook the fact that the gripping power lies in the forearm. Even with the disadvantage of small hands, large muscular forearms always

mean a good grip. Thigh measurement may be very deceptive. This is because the tapeline is applied high on the thigh, whereas the strength lies principally just above the knee. The thigh muscles, like the hips, take on fat readily. Look for good delineation when the muscles are contracted. As usually measured, just below the buttock, the thigh of a man 5 ft. 2 ins. tall should be approximately seventeen inches. For each additional inch in stature the thigh should increase three-quarters of an inch.

Weight, taken last as a rule, will be approximately correct if the subject is well proportioned; it is, of course, the sum of the other items and will depend on them. A few pounds discrepancy from stereotyped figures matters little. Differences in the density of the bones and in the age of subjects have a bearing on this.



Skin, Eyes, Hair, and Nails

In addition to the measurements and tests, it is well to examine the skin, eyes, hair, and nails. To the competent examiner the general condition of the skin means a great deal. It should be smooth, free from eruption, warm, elastic, and slightly moist. Its colour should be neither pale nor flushed; the former may indicate anæmia and the latter is often the result of engorged blood-vessels.

A simple test of the circulation is to press the finger hard against the forearm for a moment; if the blood brings

back the usual colour to the spot promptly when the finger is taken away, a good circulation is indicated. It is well also to note the condition of ankles and hands; if these extremities are red, engorged, and puffy, there is some circulatory weakness.

The eyes are generally considered a barometer of health, and rightly so, when there is no local trouble to mislead one. They should be clear and bright with pupils jet black. When the iris is streaked with brown and shows irregular spots, organic sluggishness may be suspected. Heavy swelling under the eyes indicates lowered vitality and frequently insomnia.

The condition of the hair is not the infallible indicator of health some would have us believe, but it does have some significance. Local scalp trouble sometimes causes very strong and otherwise healthy persons to have poor, scanty hair, and I have known semi-invalids to possess hair that was the envy of their more robust friends. Speaking broadly, abundant, healthy hair indicates vitality. It should be neither brittle nor excessively oily, but light, airy, and easily manageable.

EXERCISES FOR HEALTH

Start in the middle! There is a reason for this advice which is based on sound common sense.

Most systems of physical culture are excellent in aiding the average person to attain increased physical tone and vigour, yet very few make more than mention of the importance of exercising the "middle region."



Where does a person become "middle-aged" first? In the middle. We call it "middle-age spread," yet it is possible—more than that, desirable—to maintain a youthful waist-line and abdomen. Many ills follow a sagging abdomen and in-

crease in girth: indigestion, constipation, loss of strength and staying power, and a general slowing down of movement.

The "middle" region lies between the ribs (above), and the groins (below). Immediately below the ribs lies the diaphragm, and between it and the groins lies the abdomen, or stomach. Nature intended man, and woman, to have a natural corset of subtle muscle here, a corset that the cleverest designers of the artificial variety have never been able to copy.

This natural corset of muscle serves at least two important functions: 1. It supports in the correct fashion all the vital internal organs that lie in this region, and prevents strain. 2. This muscular corset, when it is muscle, and only then, massages (by contraction and expansion, which is the action of muscles) the internal organs which lie behind it.

Exercises That Help

Here is the first exercise, to regain, or improve, the present that Nature gave you when you were very young. Do it lying in bed tomorrow morning.

Exercise No. 1.—Lying on your back, and flat in bed, place the palms of your hands on the lower stomach (with finger-tips of each hand touching the groins), press with the palms and lift the stomach inward. Do this several times (say five), then lift the lower stomach inward without the aid of the pressure of the hands.

That is the basis of all we shall say about exercise. The lower stomach should be lifted inward, and upward, no matter what exercise you are doing with the rest of the body.

Exercise No. 2.—In the same lying-down position as in Exercise No. 1, raise one knee (the left first) until it makes a tent of the bedclothes. (The same position as when you raise the knees to prop your book against them when reading in bed.) Do this with one leg. Now bend the left knee upward and over to the right, and you will feel the stomach contract. Repeat five times, and then do the same with the right leg.

To begin with your stomach will merely follow the movement started by the leg, but later you will greatly increase the benefit of this exercise if you actively contract the lower stomach muscles as you move the leg.

If you are out of trim, or are suffering from a middle-age spread, do only these two exercises for the first fortnight (morning and night). Later go on to the next stage, which is:

Exercise No. 3.—Sit in a straight-backed chair—sit well back until the whole backbone touches the chair. Now place the palms of the hands on the lower stomach (as in Exercise No. 1) and lift the stomach upward and inward. Do this movement rapidly five times, then contract the lower stomach muscles and hold them in for the count of five. Repeat this "five fast and one slow" movement five times.

Incidentally, you can practise this bracing of the lower stomach muscles during the day (without the hands, of course when you are walking, sitting, or standing, and their muscular tone will improve with astonishing rapidity, while your waistline will slim. Always remember to keep the "hollow" out of the small of the back as you do when you press your spine against the back of the chair. Keeping the spine straight will take the strain off the lumbar region (i.e., the small of the back, or where you get lumbago), and will prevent you getting a tired ache in the back.

Exercise No. 4.—Still sitting in your straight-backed chair, place both feet firmly on the floor with heels touching the front legs of the chair. Place hands on hips, and lean forward as far as you can (until chest touches knees) with the back kept perfectly straight, then return to the upright position. Take a breath in before you start to lean forward, and also brace the lower stomach inward as well. Keep the stomach braced in, and breathe out slowly as you bend down and then up.

Exercise No. 5.—Sitting in the same position as in Exercise No. 4, place hands behind the head and bend the body to the left as far as you can go; then repeat to the right. Do this as with the other exercises, five times.

All these exercises can be done with complete safety by Mother, Father, and the children; they are designed with that end in view.

Breath Is More Than Life

You can live a fair time without water and a longer time without food, but without air you could not last out five minutes.

Silly to tell you that, you may say, but there is a reason. The reason is this: man will take a certain amount of trouble over his food and drink, but how many give even a momentary thought to breathing?

Breath can bring, and does bring, good health. It can also bring increased mental vigour; can assist you to success in your work; can give you poise and personality.

In the east breathing has been a science for over 3,000 years; in the west they are now making up for lost time and making rapid progress toward a fuller understanding of the therapeutic and mental value of breathing.

Now for some practical work.

We told you before to start your exercises in bed, or lying down, and we repeat that advice now. Place the tips of the fingers on the diaphragm and press inward as you breathe out. Next breathe in and force the diaphragm out. You have just completed the first correct breath (in all probability) that you have taken in for years.

Many people lift the shoulders or puff the chest up when they breathe. This is all wrong! Do you ever try to open your umbrella at the ferrule end? Of course you don't, yet that is exactly what the chest-lifting, shoulder-lifting man and woman try to do with the lungs. If you think of the lungs as a sort of umbrella (the ferrule-end being the shoulders and the opening-end being the diaphragm) you will get the right idea in a simple form.

Here are some simple breathing exercises to follow the first exercise which you have just done lying down. We advise you to start breathing lying down, for the simple reason that it is very difficult not to breathe correctly in this position.

You should never hold the breath but breathe quickly in and slowly out. Actually, you will find that if you breathe out completely the in-breath will of necessity be rapid.

As we all breathe all the time, it is an easy matter to practise correct breathing at all times of the day. On your way to work you can practise. Take a quick breath in and then count four as you breathe out. Always breathe in with the same rapidity, but gradually school yourself to breathe out slower and slower.

The value of slow out-breathing lies in the fact that the heart tries to beat four times to every intake and every outgoing of breath. Here you have the reason why so many so-called athletes eventually sustain strained heart muscles: they pant, and the poor heart cannot possibly keep pace with the wrong rhythm of the breath.

Exercise No. 1.—Stand with legs wide apart and arms at the sides. Breathe out completely and lean slightly forward as you do so (this aids complete exhalation). Now raise the arms sideways quickly above the head and breathe in as you do so. Complete the exercise by breathing out as you slowly lower the arms to the sides.

Exercise No. 2.—Breathing through alternate nostrils. Place the finger against the left nostril and breathe out through the right. Breathe in through the right nostril, place the finger against the right nostril and breathe out through the left nostril. Repeat seven times with each nostril.

Exercise No. 3.—Sit on the floor and do a rowing movement (hands starting from the diaphragm and going out to touch the toes). Breathe in quickly as you move forward to touch the toes and out slowly as you lean back and bring the hands from the toes to touch the diaphragm once again. Repeat seven times.

Exercise No. 4.—Kneel on the floor and place the palms of the hands about a foot in front of the knees on the floor. Lean forward over the hands (with arms straight) and breathe out slowly. Lean back, until you are sitting well back on the heels and breathe in rapidly as you do so.

Repeat seven times. You will feel the breath going right down to the diaphragm as soon as you do this exercise correctly.

Correct control of the breath gives you more than good health, it will bring you a clear speaking voice, and your personality will develop through the added poise you will gain.

Exercising the Lower Limbs

"Foot tired is all tired" is an old Scottish saying, and there is no doubt that tired feet take greater toll on the body than is generally appreciated.

You may be surprised to learn that the comfort or discomfort of the feet is reflected in the face as in a mirror. You may try all the beauty salons in Europe with the hope that some of the tired lines which appear on your face may be eliminated, but if your feet are uncomfortable there is little likelihood of your dismissing the signs which Nature puts there.

Here then are some foot exercises.

Do these barefooted. Stand with your hands on the back of a chair, heels together and toes turned out, making a "V" with the feet.

Exercise No. 1.—With hands placed on the back of the chair to steady yourself, raise the body on to the toes and then down. Resting momentarily on the toes (when up) and then on the heels (when down).

Exercise No. 2.—Place the toes touching (in a pigeon-toed position,) repeat the same movement as in No. 1. Up on the toes, down on the heels. Do each of these movements a dozen times.

Exercise No. 3.—Still holding the back of the chair, stand on the right foot, place the sole of the left foot against the inside of the right foot, and roll the right ankle over until it touches the ground. Next roll the foot back to the upright position. This is an excellent movement for strengthening the ankles. Repeat standing on the left foot and placing the sole of the right foot against the inside of the left foot.

Exercise No. 4.—Now sit on your chair, stretch your feet out in front of you with the heels touching the ground. Stretch the foot as far forward as possible and screw the toes under the feet. Now turn the toes upward (still with the feet stretched out as far as possible.) Repeat this screw-stretch movement.

Exercise No. 5.—Raise the feet until they make an "L" with the legs, and repeat the screw-stretch movement with the toes. The object behind these exercises is to gain toe mobility.

Exercise No. 6.—Sit well back in your chair and raise the legs with the knees stiff, toes pointing outward. Circle the feet from the ankles, first right and then left. This will slim your ankles.

Some Good Leg and Knee Exercises

All the exercises above will aid you in slimming and strengthening your calves, and preparing them for these more strenuous exercises.

Exercise No. 7.—Stand with your heels together, toes apart, hands on the hips. Raise the body on to the toes. Next bend the knees and lower the body slowly into a squatting position. You know this movement well, for it is the knee-bending exercise that you did at school.

Exercise No. 8.—Stand with the feet flat on the floor, about a foot apart, arms stretched out in front of the body. Do the squatting movement (as in No. 7 only with feet flat, and not raised on toes this time) slowly down—slowly up.

Exercise No. 9.—Hop on alternate feet for six hops. Repeat three times with each foot.

Now we arrive at the knees. Next to the "middle," which we talked about in the first section of this chapter, old age makes its appearance at the knees. We talk of people being "weak at the knees," but there is no need for age to make its appearance here if you give your knees their regular daily exercise, and here is how to do it.

Exercise No. 10.—Stand with your feet together and without moving the feet, but merely transferring the weight

of the body forward on the toes, slowly kneel down. You will probably find that you are unable to do this movement slowly to begin with and I advise you to support yourself by placing your hands on the side of your bed, and facing it, while you gain initial strength. It is also advisable to place a cushion where the knees contact the floor while learning this exercise and gaining control of the muscles. Kneel down slowly, then slowly raise the body until you are again standing on the feet.

Exercise for the Thighs

Exercise No. 11.—Sit well forward on your chair, legs apart with heels touching the front legs. (That means that the left heel will be touching the left leg of the chair and the right heel will be touching the right leg of the chair.) Sit forward with the back upright and place the palm of the left hand on the left knee and the right palm on the right knee. Now raise the heels alternately and as you do so, press with the palm of the hand on the knee as it rises and lowers. (Somewhat like playing the harmonium.) This pressure with the hands brings the muscles of the upper leg into play. Repeat this exercise for twelve movements with each leg.

Exercise No. 12.—Lie down on the floor and do a cycling movement with the legs. Point the right toe, and as you do so lift the left knee toward the body. Grasp the left knee and pull it in toward the body. Lower the left knee, and point the toe with straight leg, as you repeat the foregoing movement with the right leg. Do this complete movement twelve times.

Exercise No. 13.—Stand with both feet together, hands on hips, and do a marking time movement without actually moving forward. Lift the knees high (first right knee, then left). Keep the body erect and endeavour to bring the knee to the chest as you lift each leg. Repeat twelve times with each leg.

Do not restrict your breathing in any of these exercises, but breathe naturally and easily to the base of the

lungs, always remembering to keep the hollow out of the base of the back.

Keeping the Spine Fit

Here are some exercises which will enable you to keep your spine in perfect order.

Exercise No. 1.—Stretching and relaxing. (a) Stand with feet together and raise hands slowly above the head as you inhale. Stretch the fingers toward the ceiling and raise the body on to tip-toe. Keep the stomach muscles braced in throughout this exercise.

(b) From the "tip-toe stretching" position relax the body forward until arms hang limply touching your toes. With this second movement every muscle in the body should be relaxed from the hips upward, the muscles of the legs and thighs alone being contracted to support the weight of the body.

Exercise No. 2.—Sit on a chair with knees well apart, feet flat on the floor for support. Link the fingers of both hands behind the head. Brace the stomach muscles inward and slowly inhale as you bend the body toward the left, then right. Continue this side-to-side movement as you inhale and exhale. Repeat for three breaths.

Exercise No. 3.—Rotation of the body from the waist. With feet wide apart and flat on the floor, and hands on hips, begin to rotate the body. First bend forward, next rotate body to right, backward, left, forward, and finally to the upright position. Repeat, alternating initial rotation from right to left (i.e., first, clockwise; next anti-clockwise, and so on.)

Exercise No. 4.—Rotation of the neck. Stand in the same position as Exercise No. 3 above, but fold the arms behind the back. Keep the shoulders squared and rotate the head round from right to left, and then left to right, using the shoulders as the centre of rotation.

Exercise No. 5.—Link the fingers, hands behind the back and palms upward. First relax forward, then raise the body and stretch the linked hands away from the body

(this will arch the back). Next relax as you bend the body (from waist) to the right, remaining to the right, arch the back as above in that side-bend position. Repeat to the left. Repeat the group of three movements three times.

Always remember to aim at keeping the spine straight when sitting or walking, and to keep the curve out of the lower back. Quite obviously it is impossible to make the spine into a straight line, but the idea of keeping it straight aids us in preventing unnecessary and harmful sagging of the spine.



Begin the day with a few exercises.



V. K. Vasudevan

The simplest water treatment—a good soap and water bath,
even if the soap does get into the eyes!

HEALING BY NATURE'S WAY

R. P. H. CHARLTON, L.P.M.E., M.S.F., M.S.S.Ch.

WATER TREATMENTS IN THE HOME

HAVE you ever thought of the many uses, besides washing and cooking, that water can be put to? Among other things, water is a very useful therapeutic agent, i.e., it can be used for giving treatment in disease. This form of treatment, in which water is the principal item, is known as hydrotherapy.

Unlike drugs and special appliances, water is freely available to everyone, and because it is readily convertible into three states of matter, solid, liquid, and gaseous, it can be used to give a wide range of treatments in any of these three forms.

Why Water Is a Valuable Therapeutic Agent

All therapeutic agents have some outstanding properties which are made use of when those agents are used in the treatment of disease, and water is no exception to the rule. These properties may, for general purposes, be grouped as follows:

1. Water is able to transmit and absorb large quantities of heat by contact. It is able to store up a larger amount of heat than any other substance. A large amount of the heat stored in hot water can be given off with only a small change in temperature. Likewise, cold water can absorb large amounts of heat without a great change in temperature. It is this "heat" or "cold" of the water that produces the varying effects when applied to the body.

2. In order to transmit heat from water or any other substance to the body, the body must be kept in contact

with that substance. Since water gives off and absorbs heat so readily, long contacts are not necessary, and impressions of heat or cold can be made by only brief contacts.

3. Water, being the perfect fluid, lends itself readily to combination with mechanical forms of treatment, especially massage treatment, such as friction and percussion.

4. As a solvent, water may be used for preparing shampoos, douches, and enemas.

5. Taken internally water is beneficial to the body largely because of its cleansing, dissolving, and washing-out capabilities. Many of the waste products of the body are



poisonous if allowed to accumulate in large quantities, and while water will help to remove some of them, several of these waste products are only slightly soluble so that free water drinking is essential to good health.

Home Treatments Are Simple

Since water is so freely available to everyone, more use should be made of it as a therapeutic agent. You may think that to give water treatment needs some special skill. To give advanced and complicated treatment it does, but there are many simple but effective treatments that can be carried out at home providing you have a modicum of common sense, a normal water supply, a good method of heating water, some bowls or pails, a rubber sheet or mackintosh, and blankets.

Before we outline any treatment, however, let us consider in a little more detail just how the application of water is able to be of use in the treatment of disease. This will help us to apply our treatments intelligently.

Effects of Hot and Cold Water

When the human body becomes, for any reason, thoroughly cold, then its vital functions are lessened. Pulse and respiration become slower, the circulation slows down, and the muscles become sluggish and do not perform their duties with precision. If this state of cold continues for any length of time, all these effects become more marked and the temperature of the body is lowered. These effects are called the intrinsic effects, or the effects of the cold itself.

Supposing, however, that the application of cold to the body, is only for a short time, then the body, which recognizes cold as being able to produce all the effects we have mentioned, endeavours at once to overcome these depressing effects. What happens? The circulation is speeded up, the nerves tingle, respiration is deeper, and the heart-beat more forcible. These effects are known as the reactionary effects, while the way the body is stimulated by a short application of cold is known as its reaction to cold.

Reactionary effects are not brought about by the actual transmission of cold to the body, but by what is known as the thermic impression of the cold on the body.

A long application of cold produces depressing effects, while a short application produces stimulating effects; the reaction of the body to cold is stimulating, the intrinsic effects are depressing.

Now consider the effects produced by heat. The intrinsic effect—the effect of the heat itself—is a stimulating one. The effect, however, is only produced when the application is short. When the application is prolonged, then the effect is depressing. Muscles refuse to work, the heart beat is speeded up, but the force with which it pumps the blood is decreased. In time, a general weakness and depression supervenes. Thus the reactionary effect of heat on the body is depressing.

Intrinsic effects are produced by long applications of cold and short applications of heat; reactionary effects are produced by short applications of cold and long applications of heat. Stimulating effects are produced by short cold applications and short hot applications. Repressive or sedative effects are produced by long cold applications and long hot applications.

Influence of Age and Health

Reaction to the various treatments may be controlled by different conditions. The age of the patient must always be taken into consideration. The ability of a very old or very young person to react is limited, and they do not tolerate any form of vigorous cold treatment very well at all. When the patient is suffering from some disease, no matter what his age, his vitality will be lower than normal, and so his ability to respond to water treatments will be less than that of a healthy person.

Exertion, providing it is enough to warm the body, will promote reaction to treatment, since when the body is warm, reactions often are much quicker. Fatigue, however, does not assist reaction, and if the patient is completely exhausted, no cold treatment should be given.

Before applying a cold treatment at any time the skin should be warm. If it is not, then some form of hot treatment must be used to bring blood to the skin. The feet likewise should be warm before commencing cold treatment.

We have spoken of the various treatments as being either hot or cold, and since the terms hot and cold are only comparative, perhaps it would be well to define them a little more clearly.

The various temperatures of water may thus be classified as in the following table:

		Fahr.
Very hot	....	104 deg. and above
Hot	....	100-104 deg.
Warm	....	92-100 deg.
Tepid	....	80- 92 deg.
Cool	....	70- 80 deg.
Cold	....	55- 70 deg.
Very cold	....	32- 55 deg.

To convert these temperatures to centigrade subtract 32 deg. and multiply by 5/9.

Do not rely on haphazard methods of determining the temperature and remember that what may seem warm to you may be distinctly chilly to a sick person; and vice versa, what may seem only warm to you may be hot to the patient. A bath thermometer may be purchased from your chemist and is by far the most reliable method of finding out how hot or how cold the water is.

WATER TREATMENTS FOR THE COMMON COLD

Among the commonest disorders from which man suffers are irritation and infection of the respiratory organs and tissues. A so-called "simple cold" may lead to something far more complicated.

Hydrotherapy can play an important part in the treatment of a common cold. If possible it is best for the patient to rest in bed, for his own benefit and also to prevent the spread of infection. Unfortunately such a course is not possible in the majority of cases, and when work has to be

continued, cold or no cold, it is best to have the water treatment carried out in the evening to ensure a good rest for as long as possible after treatment.

Treatment may be carried out as follows: Have the patient in bed in a warm room. The patient should lie on a rubber sheet, and another rubber sheet or towels will be required to prevent the bedclothes from getting damp. Remove the night clothing, and apply a fomentation to the spine. This fomentation should not be too hot as the patient has to lie on it during the whole of the treatment. Make the fomentation long enough to cover the spine from neck to hips. Cover the patient with a sheet to prevent draughts.

Now place the patient's feet in a bowl of hot water. The water should be deep enough to cover both feet up to the ankles. The water may be kept hot during the treatment by the addition of more hot water, but make sure that you do not pour the fresh hot water directly on to the patient's feet.

The patient is now in bed, with a fomentation applied to the spine, his feet in hot water, and covered with a sheet. Next, apply a fomentation to the throat and chest. Make sure that the chest is well covered, and that the fomentation is tucked in at the sides. Let the fomentation remain in position for three to four minutes, then remove and immediately apply a hard towel, wrung out in cold or iced water. Go over the chest quickly with this cold towel, wipe the chest dry, and apply another fomentation. Do this three times and finish off the treatment with a cold mitten friction.

This treatment can be used to advantage twice a day. If the patient cannot remain indoors he must at least remain in for one hour after the treatment.

When the treatment is carried out in the manner described the patient should be warm and refreshed, not chilly. Should the treatment be given only once a day, in the evening, some preparation such as camphorated oil may be applied to the chest, which should be covered with a warm flannel.



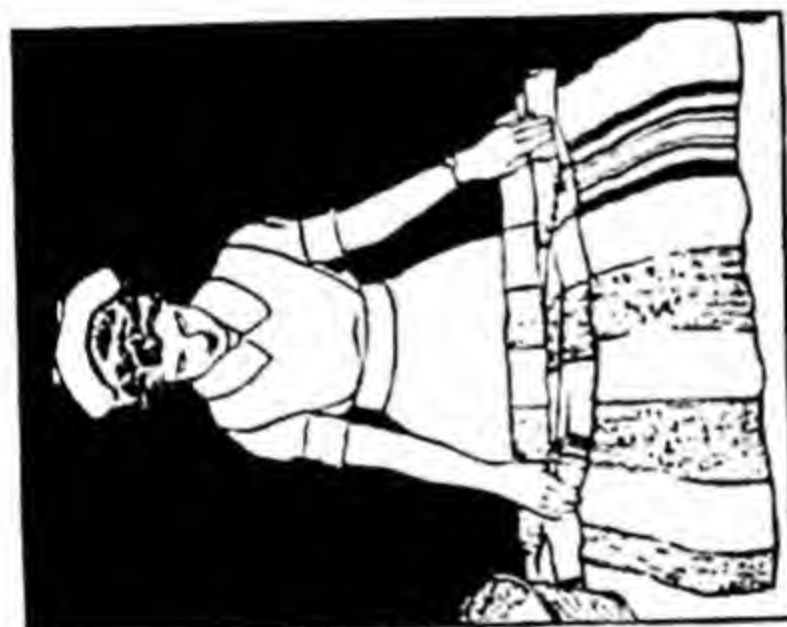
Applying a cold compress to the throat.

A good alternative to this treatment for busy people is a hot bath for fifteen minutes before retiring, dry thoroughly and wrap up in a warm blanket. When in bed have a hot drink to encourage perspiration. Before going out in the morning have a brisk rub down.

The procedures outlined for this treatment are prepared in the following way:

How to Give a Fomentation

You will require a set of at least four or six fomentation cloths. These may be cut from old blankets, and should be of good size—36 in. by 36 in. is suitable. Also required are two Turkish or similar towels, a cotton sheet for covering the patient, bowl of cold water (iced if possible), one or two hard towels, and a rubber sheet.



To prepare a fomentation, immerse cloth in boiling water, saturate it well, lift it from the water and wring quickly by twisting ends until water no longer runs from it.

Next place the hot fomentation across the middle of the dry cloth which has previously been spread on a table.

Fold the dry ends over its wet centre, and fold the outer cloth snugly about the wet one. Apply to the patient immediately.

Spread one dry cloth on a table, and fold another into three, making a long strip. Immerse this in a pail of boiling water. Leave the two ends out of the water so that you can hold the cloth to wring it out when it is removed from the pail. If a wringer is available it is best to use it for wringing the fomentation. Wring the cloth as dry as possible and as quickly as you can, and then fold it in the cloth already spread out on the table. The fomentation should be folded so that it is slightly larger in area than the part to be treated.

In the ordinary course of events three successive fomentations are given. The fomentation should lie in close contact with the skin, and it should remain in position for three to four minutes. If the patient complains that the fomentation is too hot, slightly raise it and wipe the skin with a dry towel to remove the moisture, or the fomentation may be applied over a towel.

When changing the fomentation, do not remove it until the next one is ready to put on, and always wipe the skin dry before applying a fresh fomentation. Failure to do this will mean that the water on the skin makes it difficult for the patient to tolerate the heat of the new application.

After the last fomentation, the part treated should be at once cooled with the cold water, applied with a hard towel. The area should then be wiped thoroughly dry and covered to prevent chilling.

If the fomentation is to relieve pain, it should be used as hot as possible, and renewed when it becomes comfortable. The cold application may be omitted.

The fomentation may be used as in the treatment outlined for colds; also to relieve pain, and to produce either stimulating or sedative effects. A brief application is stimulating, while a longer, slightly cooler one is sedative.

A fomentation dilates the blood vessels of the part to which it is applied, and has a soothing effect on the nerve endings. In this way it aids in absorption or effusions as well as relieving pain.

Cold Mitten Friction

You will need a pail of cold water, iced if possible, a sheet, two or three Turkish towels, and a pair of mittens made from coarse material such as Turkish towelling.

Proceed as follows. Protect the bedding with a mackintosh or towel and keep the patient covered. Do not expose more of the body than is necessary.

Put the mittens on the hands and dip them into the pail of water, remove, shake out the excess water. Beginning with the patient's upper limbs, rub the arm and hand with a rapid to and fro movement, until it feels warm and glowing. Drop the mittens back into the pail, and with the towel dry the limb, rubbing until it is well reddened. Treat the lower limbs in the same way. Next expose the chest and abdomen and treat in the same way as the limbs. Turn the patient over, place a pillow under his chest, and treat the back.

When the treatment is finished, make sure that the patient is quite dry and warm, not chilly.

BATHS FOR HEALTH AND HEALING

When we speak of a bath of any kind we automatically think of the appliance usually found in the bathroom. In hydrotherapy the term "bath" is used to describe the various procedures which are more or less similar, in that they have as an integral part of the treatment a form of bath.

Baths may be of two classes—partial immersion baths, in which type only a part of the body is immersed at a time; and full immersion baths, when the whole body is immersed.

The Foot Bath

This is one of the most useful forms of hydriatic treatment and may be given in three ways—hot, cold, or alternately hot and cold (more often called "contrast baths"). Large pails or bowls may be used, as long as they are deep enough to hold water to cover the ankles.

If the foot bath is given to a patient in bed, remember to cover the bed with newspaper or a rubber sheet, and keep the patient wrapped in a blanket, which should be tucked around the legs and foot bath to prevent the circulation of air.

When the treatment is finished, dry the feet well, and cover with a warm, dry blanket; or if the patient is not in bed replace the socks and shoes or slippers at once.

For the hot foot bath, have enough water in the bowl to cover the ankles. Start the bath with the temperature of the water about 105 deg. Fahr., and raise it slowly by the addition of fresh hot water to about 120 deg. Fahr. The patient will be able to stand hotter water



The hot foot bath.

if the feet are kept still in the bath. Continue the treatment for five minutes to half an hour. Then the feet should be removed from the hot water. After having cold water dashed over them, they should be wiped thoroughly dry.

The hot foot bath is an effective method of drawing blood from congested centres, and the cold splash at the finish helps to maintain the derivative effect.

Cold Foot Bath

The feet should be warmed before treatment is commenced. The temperature of the water should be between 45 and 60 deg. Fahr. and the depth of water about two to four inches. While the feet are in the bath they should be rubbed one with the other or with the hands. One to five minutes is long enough.

This foot bath has a reflex action on the blood vessels of the brain, liver, and pelvic organs. It is contra-indi-

cated, however, in very acute abdominal or pelvic inflammation, and during the menstrual period.

Alternate Hot and Cold Bath (Contrast Bath)

Two bowls or pails will be required, one for the hot water and one for the cold water. Use enough water to cover the ankles with both hot and cold water. The hot water should be as hot as can be tolerated. Immerse the feet in the hot bath first, for about two minutes. then plunge them into the cold bath for fifteen to thirty seconds. Keep this up for about fifteen minutes, and finish with the cold immersion. The feet should then be wiped dry.

This form of bath produces a marked speeding up of the blood circulation in the part treated. It is very useful in the treatment of severe congested headaches. Since it speeds up the supply of fresh blood to the part, this bath is very useful in the treatment of various infections of the foot.

Arm and Hand Bath

The arm and hand can be treated in the same way as the foot. For the arm bath, however, larger bowls are most useful, or failing this, deep pails may be used as the water must cover the elbows. The procedure for the hand and arm baths is the same as for the foot baths, but the effects are not quite so marked.

The cold hand bath, with water up to the elbows is useful in controlling epistaxis (bleeding from the nose).

Contrast baths to the arm and hand are valuable in the treatment of septic infections. The hot water must be kept as hot as possible. If there are any open wounds a little antiseptic, such as Lysol or Dettol, may be added to the water if required. The alternations of hot and cold are as for the foot bath, but may be kept up longer, for thirty minutes to one hour. After the treatment, dry the parts and replace any dressing. This treatment may be repeated three or four times a day according to the severity of the case.

Leg Bath

This may also be given in any of the three ways described for the foot bath. The pails, however, must be deep enough to hold sufficient water to reach up to the knees. For comfort it is best to have the patient sit on a stool, or chair with cushions made up to two or three inches higher than the pail.

The hot leg bath produces the same effects as the hot foot bath but in the leg bath the effects are much more powerful.

If fomentations to the spine or chest are used in conjunction with the hot leg bath, profuse perspiration is induced. When this form of treatment is used it should be finished off with a cold mitten friction.

The procedure for the contrast leg bath is the same as for the contrast foot bath. It is necessary, however, to apply a cold compress to the head.

This bath speeds up the circulation in the lower extremities and is useful in the treatment of œdema of the lower limbs. The duration of the bath should be: hot water, two minutes, cold water, thirty seconds.

The bath may also be used for the treatment of varicose ulcer. In this case, however, the time the leg is kept in the hot water should be reduced to one minute, and the time the leg is kept in cold water may be increased to one minute. If this is not done, the swelling around the ulcer will be made worse.

Full Immersion Baths

The bath should be long enough to allow the patient to be completely immersed (except his head, of course). A small pillow may be provided for the patient to rest his head on, and if the patient is very thin, a folded sheet for him to sit on will add to his comfort.

When hot baths are given, it is best to place a cold compress on the patient's head, and it is also advisable to check the temperature of the water with a bath thermometer.

A plain hot bath, with the temperature of the water at 100 degrees to 106 deg. Fahr., may be given as a preparation for a cold treatment or when it is desired to raise the body temperature and produce sweating.

Warm baths with water temperature about 100 degrees are useful in the treatment of many diseases in which there is spasticity of muscle. The patient may remain in the bath for two to twenty minutes and the bath finished by cooling the water, or by giving the patient a cold shower.

The Cold Shallow Bath

This type of bath is a very powerful tonic.

The bath should contain water to a depth of five or six inches. The patient sits down in the bath and vigorously rubs his arms and legs, while the attendant rubs the back and chest. Cold water is dashed over the patient's body and he then lies down in the bath and rubs his chest and abdomen.

The treatment should not last long, five minutes is quite enough and in some cases two minutes will suffice. When the patient leaves the bath he should be warm and glowing, not chilly.

Remember that at the end of any cold treatment the patient should feel warm. If he does not, then something is wrong, and you must see to it that he is warmed up, with the use of hot water bottles, blankets, and hot drinks at once.

The treatments we have outlined are by no means comprehensive but they are simple and effective, but I would advise you to consult the medical adviser before using them on a patient in your care. A doctor can always recognize symptoms and contra-indications to treatment, that a layman cannot.

TIMELY TIPS

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TEN TIMELY TIPS FOR THE CONSTIPATED

THE regular elimination of residual wastes through the bowel is one of the prime essentials of good health. Here are ten timely tips to prevent the colon coming to a full stop:

1. **Abandon all harsh purgatives.** Such measures stimulate the intestinal muscles violently and at their own expense. Purgatives lead to weaker tone and flagging response. Warm water used in colon douching by skilled hands is safer when drastic measures are needed.

2. **Strict exercising regularly.** Defecation is largely a muscular reaction. Internal muscles must therefore, be toned up by exercise. Have two ten-minute periods each day to vitalize the abdominal muscles and nerves. Nothing violent is needed, just flexing, stretching, bending, and kneading of the muscles concerned. Bend with legs straight and touch the toes; lie on back, raise the legs into the air and lower slowly; raise the trunk to a sitting position and lower slowly; balance the hips on the hands and with the feet in the air bicycle quickly. Walk about three miles each day.

3. **Cultivate regular habits.** Constipation is more often due to bad habits than to anything else. The body appreciates and responds to regular attention at approximately the same time each day. Never repress the natural impulse to evacuate poisonous waste.

4. **Assume natural position at stool.** The most efficient and easy posture for defecation is a squatting position with knees up to chest. To achieve this with modern pedestal basin place a stool on which you can rest your feet. This eases the rectal function enormously.

5. **Eat vitalizing, laxative foods.** These are raw salads and vegetables, cooked fresh vegetables, baked potatoes, fruits, honey, dried fruits, wheatmeal bread, whole grain cereals, nuts, pulses, milk, etc. Make it a rule to have no meal without at least two of these foods included.

6. **Avoid denatured foods.** White flour breadstuffs, sugar, polished cereals, confectionary, and synthetic foods such as custard powder, possess no vitalizing qualities. Fried foods and flesh foods are best avoided.

7. **Drink between meals.** Constipation can be caused through poor digestion as the result of gastric dilution, and lack of sufficient water daily.

8. **Eat vitamin B foods often.** Vitamin B is essential to good digestion and elimination. Wheatmeal bread, whole cereals, wheat germ, yeast, and leafy greens are rich sources.

9. **Avoid high mental tension.** Learn to balance intense mental work with physical activity or a manual hobby. Mental tension tenses the nerves and interferes with normal elimination.

10. **Look upon defecation as a welcome function.** It is vital, health-protecting, and natural. If childhood training has conditioned you to look upon it as distasteful and disgusting, revise this now. It is not uncommon for this psychological attitude to be at the root of constipation.

TEN TIMELY TIPS FOR THE DYSPEPTIC

It is worth remembering that digestive upsets arise from psychological as well as physiological causes.

1. **Avoid all drinks with meals.** If you must drink, do so before the meal, preferably a wine-glassful of vegetable or fruit juice. This allows better concentration of gastric juices to digest food. Take other drinks between meals.

2. **Avoid hard-to-digest foods.** These are chiefly fried foods, greasy, rich fare, cakes, pastries, highly-spiced sauces, condiments, and unbalanced refined foods such as white flour bread-stuffs, polished rice, sago, etc.

3. **Choose diet from whole foods.** Wheatmeal bread, whole grain cereals, vegetables, milk, eggs, fruits, dried peas, beans, lentils, macaroni, spaghetti, and nuts provide good variety. Stimulating meat foods and essences must be avoided, also alcohol.

4. **Toast all bread.** This should be done by toasting the bread thoroughly in the oven. The bread is partially dextrinized and made more easily digestible. It also encourages thorough mastication.

5. **Eat a salad a day.** Preferably of three vegetables chosen from celery, grated carrot, shredded cabbage or sprouts, watercress, cucumber, lettuce, spring onions, tomatoes, radishes, dandelion leaves, parsley, mint, etc. Balance with grated cheese or nuts or rissole, and toast.

6. **Eat small, well-balanced meals.** Each meal should include either some fruit or some vegetable fare; some cereal (or potato if a cooked vegetable meal); and a serving of a protein food (cheese, pulses, nuts, egg) in a savoury dish.

7. **Eat only when really hungry.** Short fasts of twelve to twenty-four hours are beneficial, provided the body functions and eliminations are adequately maintained.

8. **Eat slowly.** Chew food well until almost tasteless. Then stomach, duodenum, and liver can perform their parts.

9. **Take a few grains of charcoal after each meal.** This may be taken as a charcoal lozenge (obtainable from any good chemist's shop) or a charcoal biscuit.

10. **Relax mentally throughout mealtimes.** Get the utmost enjoyment from your food. Banish worry, radio, newspapers, and books from your mealtime. After the meal, rest and relax for fifteen minutes.

TEN TIMELY TIPS ABOUT HIGH BLOOD PRESSURE

Do you suffer from high blood pressure? If so, here are a few points of counsel which will help you.

1. **Remember high blood pressure is not a disease.** It is an indication of underlying causes of ill-health at work.

2. **Develop your breathing.** Practise a steady rhythm of deep inhalation and long exhalation. Blood pressure is primarily dependent on the heart and blood vessels and these in turn are conditioned by the blood circulating through them.

3. **Exercise regularly but with care.** Exercise keeps the organic machinery functioning well. Regular exercise is necessary to keep the blood flowing freely and equalise its distribution.

4. **Relax frequently.** Both mental and physical tension serve to heighten blood pressure. Mental work should be broken by five minutes relaxation every two hours—even if only to stretch or walk round the room. The physical activity of life must be balanced by short relaxation periods after meals, and adequate rest, at least eight hours at night.

5. **Maintain regular eliminations.** An overloaded toxic bloodstream circulates slowly, and tends to create pressure. There should be at least two alvine calls and six renal calls per day. Good porous activity of the skin is also essential.

6. **Keep the body's alkaline reserve high.** Alkalinity is essential to ensure thorough cleansing of the tissues and the rebuilding of supple, youthful cells. Fresh vegetables, salads, fruits, and milk are good alkalinizing foods.

7. **Eat more meatless meals.** One of the chief causes of high blood pressure is hardening of the arteries due to deposits of a waxy substance, cholesterol, on their walls. Meats are rich in cholesterol. So learn to replace flesh-foods in meals with milk, cheese, lentils, peas, beans, nuts, and whole cereals.

8. **Lower blood pressure with garlic.** The medicinal principles of garlic are especially valuable in lowering a high blood pressure. Garlic may be used in soups, and to flavour savouries. As a tonic, chip half a segment, simmer ten minutes in a cup of milk, and drink at night.

9. **Beware of emotional crises.** Strong emotions—anger, jealousy, hatred, worry, etc., increase blood pressure, especially in brain centres. Cultivate a happy and mentally relaxed outlook.

10. **Live temperately.** High blood pressure demands the philosophy of moderation in all things.

TEN TIMELY TIPS FOR THE CATARRHAL

Catarrh is caused by the over-production of mucus on the part of the body in its effort to eliminate irritating or waste substances. It becomes inconvenient when the mucus rises to the throat and head passages. Complete cure lies in re-establishment of the normal functioning of the mucous membranes, removing irritant causes, and enabling the body to get rid of the mucus in the normal way—through the bowel.

1. **Avoid cold feet.** The seat of mucus-congestion is the digestive system. Cold feet mean chilled nerves and this is reflected to the stomach region resulting in poor digestion and excessive mucus formation. If subject to cold feet—most catarrhal people are—take nightly hot and cold water foot baths. Place the feet in hot water for one minute, then plunge into cold for one minute, and alternate for ten minutes. Then dry well.

2. **Take skin bath each morning.** This may be done by exposing the body to mild moving air while exercising, or taking a cold or tepid water bath—whichever produces a tonic glow. The object is to stimulate the skin—the external counterpart of inner membranes—so that it can eliminate more wastes and so relieve the mucous membrane. Take rough towel rub after bath.

3. **Spend one hour or more daily in fresh air and sunshine.** Walk daily until skin is aglow. Breathe deeply. Sun bathe whenever weather is suitable.

4. **Avoid constipation.** Any hold-up in the intestines results in the mucus level in the body passages rising. The best "laxative" is fruit or vegetable juice taken neat before meals.

5. **Omit mucus-forming foods.** Cheese, butter, milk, yeast-risen breadstuffs, fried foods, and denatured foods tend to increase the formation of mucus, especially in the stomach. Omit these foods for a few weeks until the pas-

sages clear. They may be gradually re-introduced when the system recovers:

6. **Eat vitalizing foods.** Salads, vegetables, broths, baked or conservatively cooked vegetables, leafy greens, fruit, dried fruits, etc., should bulk largely in the menu.

7. **Dextrinize all bread and cereal fare.** Wheatmeal bread, cereals, and cereal biscuits should be toasted crisp in the oven in order to kill the mucus-forming yeast and fungi, and ensure easy digestion and assimilation.

8. **Have friction rubs morning and night.** To cleanse the pores and awaken circulation through the skin tissues and to improve nervous tone and waste elimination, take a rough towelling of entire body each morning after air or water bath, and each evening after massaging skin with hands moistened with a little almond oil. The cumulative result of this over four or five weeks is wonderful.

9. **Clear head passages with borax.** Each morning, sniff a pinch of powdered borax up each nostril. Then dip a wetted thumb in the borax and place this at the back of the palate. Hold one minute without swallowing. Then expectorate and blow the nose. This clears all phlegm.

10. **Exercise body extremities daily.**

TEN TIMELY TIPS FOR THE DIABETIC

Diabetes is due to the failure of the pancreas to provide a substance called insulin in sufficient amount to ensure the utilization of sugar by the body in the normal way. Although the medical treatment is to supply insulin prepared from animal sources regularly, there are many ways in which the diabetic can make life healthier and happier.

1. **Check your weight.** The true diabetic is slender, and more likely to be underweight than unduly heavy. If overweight, a careful slimming diet will do much to clear up diabetic symptoms.

2. **Cut starch and sugar foods.** Starch is converted into sugar before becoming absorbed into the blood. In order to prevent overstrain of a weakened pancreas, the amount

of sugar present in the blood must be regulated to the amount the body can immediately use. It cannot store it successfully, and excess has to be eliminated. This can be checked through the urine. Starchy foods—bread, cereals, confectionary, cakes, pastry, pulses, etc., must be reduced to the point where no sugar appears in the urine. Sweet foods, sugar, jam, etc., are best omitted.

3. **Eat gluten or starch-reduced breads.** Special diabetic cereal foods are available to help in reducing starch intake. Diabetic jams, preserves, and chocolate, if obtainable, are also useful.

4. **Eat at least one salad a day.** Fresh salad vegetables strengthen internal secretions. All leafy greens, tomatoes, grated carrots, etc., are useful.

5. **Offset absence of starches with fats.** Extra fat in the shape of butter, milk, and dairy foods helps to maintain strength.

6. **Have a daily hot foot bath.** Diabetics are prone to the development of trouble in the arteries of the legs and feet, particularly if middle-aged or older. Care must be taken to prevent numbness or coldness in the feet by having a daily Epsom salt foot bath and massage.

7. **Cut out smoking.** The use of tobacco has an untoward effect on the circulation in the feet. During smoking, the blood vessels become pinched and prevent free circulation.

8. **Exercise regularly to maintain good circulation.** Regular exercise keeps the blood flowing to the periphery of the body. It also distributes the blood sugar evenly, maintaining proper metabolic combustion. Simple rhythmic movements, friction rubs, and daily activity in the open air are best.

9. **Have hot bath when tired.** This should be about 105 deg. Fahr. Make it a ten-minute bath.

10. **Fast from food one day in seven.** A fast enables the body to concentrate on self-healing. Drop all solid foods, and simply have distilled water, or fruits, or vegetable juices when hunger insists.

TEN TIMELY TIPS FOR THE NEPHRITIC

Nephritis, or Bright's disease, as this form of kidney trouble is more generally known, is something more than a local disorder. It involves some weakness of the whole constitution.

1. **Adopt a low protein diet.** It is the kidneys' job to eliminate protein residual wastes. With the object of reducing the work done by the kidneys and affording them opportunity for self-healing, high protein foods like meat, fish, eggs, etc., should be severely cut in the diet. Milk, cheese, mushroom and vegetable protein—peas, beans, lentils, nuts—may be used in place of flesh-foods for many meals.

2. **Avoid excessive amount of water.**

3. **Restrict acid-forming foods.** The kidneys are the chief agents in removing acidity from the body. Help them by abstaining as much as possible from such acid-forming foods as eggs, meats, fish, fowl, oats, rice, plums, etc.

4. **Eat vegetables at two meals out of three.**

5. **Make up menu from balanced foods.** For starches, choose wheatmeal bread and whole cereals in preference to white flour foodstuffs; for sugar, choose natural brown sugar or honey; for fats, choose butter, olive oil, vegetarian margarine, and cooking fats in preference to animal fats or oils.

6. **Avoid large amounts of salt and spiced foods.**

7. **Drink barley water and celery seed tea.**

8. **Keep the skin well toned.** An active skin relieves kidneys of overload. Have friction rubs, air baths, sun baths, often.

9. **Have long walks daily.** Walking particularly benefits the genito-urinary system.

10. **Avoid all excesses and exposures.**